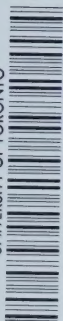


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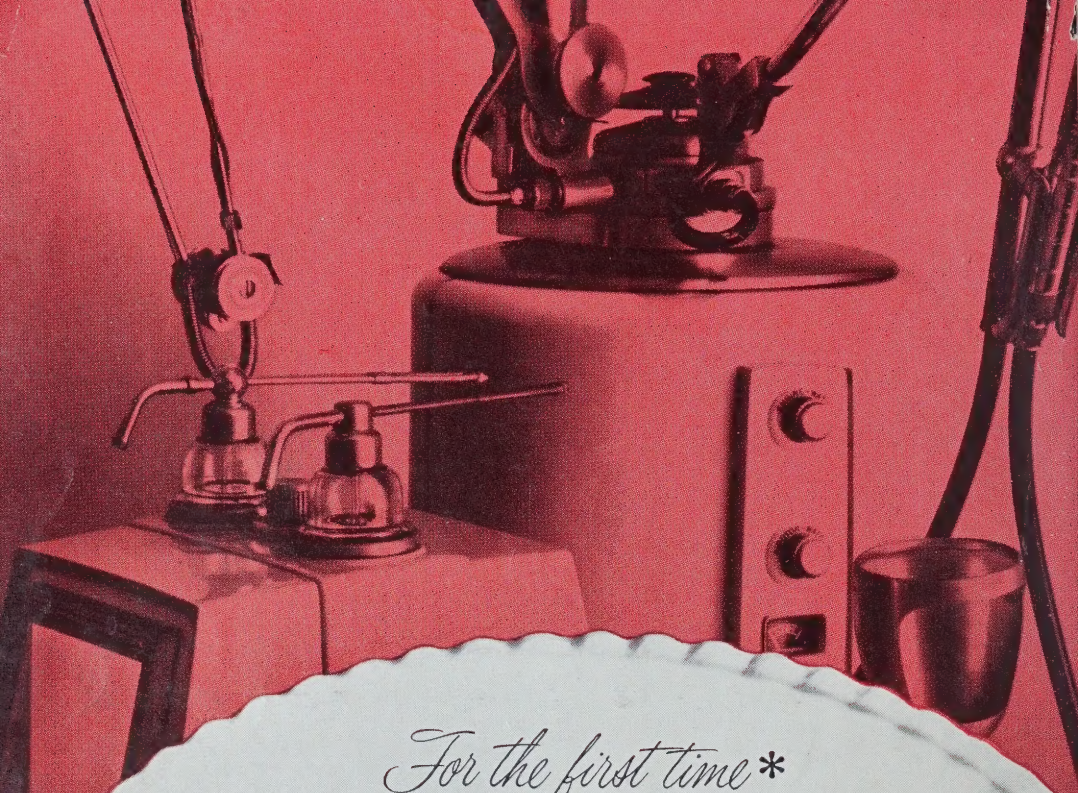
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CONTENTS

	Page
Leading Articles	
The Health professions and the Challenge of Widening Horizons and Changing Patterns—Brown	1
The Burlington Orthodontic Research Centre: A Measure of its Role in Dental Public Health—Harvold and Hatton	6
Special Article	
New Developments in Education—Williams	18
Research Annotations	21
Editorials	
Private Practice: Cornerstone of Dental Care	24
John B. Macdonald, President of the University of British Columbia	25
Bureaux, Committees and Councils	
Comments on the Survey of Dentistry in the United States: I. Dental Public Health	26
Federal Income Tax Returns by Members of the Dental Profession	31
Dentistry in the News	
The Association	35
Canada and the Provinces	35
International Items	42
Canadian Dental Schools	44
Royal Canadian Dental Corps	44
Public Health	46
Research	47
Correspondence	
Functional Relationship of the Maxilla and Mandible—Logan	48
Ontario Fluoridation Investigating Committee Report—Leslie	49
Book Reviews	50
Additions to the Library	52
In Memoriam	53
C.D.A. Retirement Savings Plan	54
C.D.A. 61st Annual Meeting	55
Announcements	58

SOMMAIRE

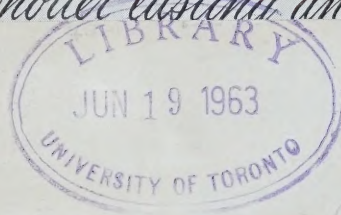
Articles	
Une nouvelle méthode du diagnostic des pathologies pulpaires—Silbert	59
Tests de susceptibilité à la carie—Brunelle	67
Les actualités dentaires	
L'Association	73
Le Canada	74



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The Health Professions and the Challenge of Widening Horizons and Changing Patterns

H. K. BROWN,* D.D.S., D.D.P.H., Ottawa, Ontario

Eminent Chancellor, the Honourable Minister of Health, Honourable Sir, Mr. President, honoured guests, members of the graduating class, ladies and gentlemen.

Before proceeding with my address to the graduating class let me say that I am humbly grateful for the honour that has been conferred upon me here today. I am also keenly aware that the things done for

which this honorary degree has been granted were not all my work. As far as the professional aspects of it are concerned, much or most of it was done or made possible by other dentists and by my associates from other disciplines: physicians, engineers, biochemists, statisticians, nurses, nutritionists, dental hygienists, superintendents of education, principals and staffs of schools and many other dedicated and generous people with whom I have been privileged to share my work and because of whom I have been able to do it. As a member of the dental profession and of the larger health team I

Address delivered at the Medical-Dental Convocation, University of Alberta, June 2, 1961.

*Dental Consultant, Department of National Health and Welfare.

shall think of it as an honour shared with them.

My address to the graduating class is entitled "The Health Professions and the Challenge of Widening Horizons and Changing Patterns."

As one generation is added to and succeeds another, so each new graduating class is added to and succeeds the ones gone before. Each in turn adds to and changes the methods and procedures of its predecessors—and goes about making such adjustments to society as are required for effectiveness and survival.

SCIENTIFIC AND SOCIAL CHANGES

In our day, accelerating scientific research, the changing social and economic picture, the broadening of group and government administration of health services and the increasing public, and hence political interest in organized health services, both here and abroad, all conspire to raise exciting challenges—and some perplexities — for the members of all health professions.

Great changes are taking place in the practice procedures and patterns of the health professions, in the nature and extent and functions of their professional organizations and in their relationships to one another, as well as to society.

Within recent years additions to the body of scientific health knowledge have come at a rate that exceeds the capacity of an individual to assimilate and utilize them. This has led to increased specialization and to the creation of a broad variety of highly trained auxiliary personnel for service in hospitals, in health units and on other health and clinical staffs, and in private practice. Equipment as well as therapeutic and preventive procedures have become more diversified and complex. Consultation and referral among different specialties and disciplines have become recognized necessities in order to provide patients with full benefits of current scientific knowledge.

One significant outcome in the area of the private practice of medicine—more than in dentistry—has been a marked in-

crease in the use of the group practice principle, which enjoys a record of many years of success. An increasing number of general practitioners, specialists and allied professional personnel have become aware of the advantage of joining forces, assisted by technical auxiliary and business management personnel. Recently the profession of dentistry, impressed by the success of the medical profession in developing and working with a variety of highly trained paramedical people, has begun to develop a similar pattern. The pressure of increasing public demand for dental care has given stimulus to the trend. It is worthy of note and commendation that the Faculty of Dentistry of this University is leading the way and giving an impetus to the development of a dental team by setting up a course for the training of dental hygienists.

It is to be hoped that the dental profession will move quickly towards the wider employment of well trained auxiliaries both in private practice and in the public health field — and also towards adapting to its use the group practice principle so well demonstrated by the medical profession.

Another hope that I would like to express concerning dentistry is that more new graduates will equip themselves to enter the research field. Dentistry has made dramatic improvements in its methods of coping with the results of dental disease. More research into its causes and prevention is urgently needed. An opinion frequently expressed is that there is a shortage of dentists. It seems to me that it is more a case of there being too much dental disease. The answer to that lies in more and better research, and a reduction in the time lag between the reporting of research findings and their effective use. Perhaps, to add emphasis to the challenge here, it is worth noting that in Canada for every \$100 expended on dental treatment only about 15 cents is invested in dental research. However, the prospects are beginning to brighten.

Public funds for the encouragement and support of both medical and dental re-

search and for the training of promising young professional research workers are now being made available on a larger scale than ever before. The Medical Research Council, and also the Associate Committee on Dental Research of the National Research Council and the Department of National Health and Welfare, are very much interested in helping competent and adventurous young investigators who wish to undertake advanced training for the purpose of entering a research career combined possibly with teaching.

New doors are opening and new challenges are being raised for the new graduate and for others not so new.

A man has travelled around the world in 108 minutes. His course began with an almost crushing force of acceleration, attained a height beyond the earth's atmosphere, almost beyond the pull of gravity. He attained an estimated speed of 17,000 miles per hour. He traversed an environment never before experienced by man, and returned to the earth. A short time later another man went through a similar but briefer experience. More and many more will follow. What challenges does this hold for medicine, for dentistry, for all health professions and the related basic sciences? One can only speculate. The future would appear to hold for you who graduate today the promise of opportunities for great achievements—perhaps even greater opportunities than for your predecessors at the turn of the century.

MEDICAL AND DENTAL PRACTICE, PAST AND PRESENT

Consider what changes have taken place since then in the professional work of the physician, and in that of the dentist and in the society they serve. Formerly the physician was expected to encompass within himself all the available medical knowledge. It was his responsibility to meet all the health needs of his community. He worked, for the most part, alone and isolated from other members of his profession. He had relatively little

in the way of equipment, drugs, hospital and other treatment facilities.

In most communities he was surrounded by an aura of mystery and held in much the same awed esteem as the local clergyman. He was often something more than a physician. He was the friend and confidant of his small community. The doctor-patient relationship had about it something of an air of sanctity. His chief medical concern was communicable disease.

As for the dental profession at that time, it was just beginning to emerge as a profession. Most dentists then were craftsmen, sharing but little of the available basic science knowledge.

Scientific and social changes have now removed from the physician his aura of mystery along with his horse and buggy, and placed in his mind new knowledge and in his hands new instruments. Now he and the dentist, and members of other health professions, work in the glaring light of increasing public interest and scrutiny.

This is not a bad thing (except for those of us who are old enough to have twinges of nostalgia). But this kind of broadening horizon does give rise to new challenges—especially as it affects the relationships of the health professions to society.

Whilst scientific developments within recent years have wrought great changes in practice methods, other changes having profound implications for the health professions have occurred. Health organizations arising locally, nationally, and now internationally in the form of the World Health Organization and its associated agencies have raised many implications for the health professions. In addition the insurance and group budgeting principles, long in use in our society for other purposes, have come to be applied on a large scale for the provision of hospital and health services. Private insurance companies have provided opportunities for the pooling of risks and for budgeting ahead. The demand by various types of groups has given rise to health care plans sponsored by professional groups and by

co-operatives. Within recent years, as an outcome of a broadening public interest in group hospital and health care plans, governments have taken an increasingly active interest in these developments.

In 1961 the federal government appointed a Royal Commission for the purpose of studying matters relating to health care. This would appear to have some interesting implications, not only for those who seek health care on some kind of a group basis, but also for those whose responsibility it would be to provide services on that basis as well as for those whose task it would be to create and operate the related administrative machinery. This Commission's reports and recommendations will be awaited with a great deal of professional and public interest. One thing is reasonably certain: the pattern of group budgeting for health and hospital care has become so well established in our society, and is so clearly on the increase that more developments in that direction are highly probable, if not inevitable. The old order changeth, yielding place to the new!

GROWING RESPONSIBILITIES OF HEALTH PROFESSION ORGANIZATIONS

This pattern of social and economic development affecting health care imposes upon the individual members of the health professions and upon their representative societies and organizations an increasing responsibility to provide wise counsel and guidance. Their leadership is essential in the development of any new planning. Challenges exist here which call for cool and clear thinking. There is a constant and growing need for good rapport and mutual understanding not only among the health professions but between them and all responsible groups concerned with the provision of health care — including governments. I think it is a truism to say that the people who provide any kind of a service are best qualified to advise on what "can" or "could" be done. In the light of the knowledge of what can or could be done, it is society's responsibility and prerogative to decide what "should" be done.

Planning how to do it is a joint responsibility. In this connection I would like to quote a sentence from a publication recently issued by the American Council on Education and entitled *A Survey of Dentistry in the United States*. It reads: "The relation of a profession to society is an ever changing one, for, as the society develops, it is inevitable that the profession must take account of that development if it is to continue to be effective." In order for a profession to take collective cognizance of what is going on in society, its full collective attention is required. The magnitude and portent of current changes bearing on the provision of health services would suggest that professional groups would be well advised to give careful thought to this matter. It is not now one which can be left for study and interpretation to the assiduity and good judgement of the dedicated few who attend business meetings of their professional group—and bear the criticism of those who are "too busy to afford the time to go to such meetings". Let me say, with all the earnestness at my command, that every professional person owes to his professional group and to the public, his attendance and help at meetings of his professional organization where policy matters are being considered. Abraham Lincoln is quoted as having said: "If we could first know where we are, and whither we are tending, we could then better judge what to do and how to do it." A close look at current health-related socio-economic developments will reveal some good landmarks to help the health professions to see where they are—and at least whither society is tending.

HEALTH EDUCATION

These comments on the relationships between the health professions and society would be lacking in an important element if no reference were made to the education of the public in health matters. Since the turn of the century research and practice in clinical and preventive medicine and surgery and in the

area of public health practice have brought dramatic changes in the disease picture. This has not been an achievement of medicine or of the health sciences alone. It has been equally a social achievement in which public enlightenment has paved the way and led to a broad and useful—but far from complete—acceptance of scientific health measures.

The communicable diseases which fifty years ago were responsible for high sickness and mortality rates have come to be largely preventable and controllable. Also some of the deadly chronic diseases have come under control, such as diabetes and pernicious anaemia. Scientific measures introduced and extended in the public health field—where significant progress is impossible without public acceptance and co-operation—such as immunization, pasteurization, chlorination and fluoridation of water supplies, safe sewage disposal, the use of antibiotics and chemotherapeutic drugs, more and better skilled medical and allied health personnel, have played a significant part. However, it cannot be too strongly emphasized that the degree to which the knowledge and skill of the health professions is reflected in better health and longer life is at least equally dependent upon the public level of health information and motivation.

The health education of the public is an essential responsibility of all the health professions. Its fulfillment is reciprocally beneficial. The professions have mainly their knowledge and skill to offer. They cannot afford to have them rejected—and the public cannot afford to reject their ideas and their skill—or even to delay acceptance. But they do, and sometimes collectively, and on a large scale. Why does this happen? What should be done about it? These are matters that will concern you gravely.

With the advent of group health care on a large scale, conceivably covering all or most of the population, these become increasingly important questions. For example, the cost—in terms of personnel and facilities as well as in dollars—of providing most types of group health care

programs can be greatly reduced by their acceptance and use of preventive measures, by individuals and by communities.

The socio-economic implications of this challenge make it one for which the health professions need the collaboration of other disciplines, in order that the acceptance of preventive measures by the individual and the community may result in a harmonious integration of health education and health service programs.

In this area such disciplines as sociology, anthropology, education and psychology have much to contribute. In fact, the resources of these fields have begun to be tapped by a new type of professionally trained person, the health educator, who has recently appeared on the public health horizon. His task is to stimulate and give technical guidance to the health education activities of the increasingly multidiscipline health team. Here is one more challenge for adaptation and good team work.

THE FUTURE

It is becoming evident that the health professions, their specialties and allied personnel, are moving on an increasing scale towards the formation of integrated multidiscipline health service teams. This arises partly from an urge to utilize a rapidly growing body of scientific knowledge. It is also a sign of an effort to adapt to a changing society and to meet and guide its collective, organized demands for health services.

In closing, I wish to say this to the graduands in medicine and in dentistry:

You could not have chosen a more interesting and stimulating time to enter upon your professional careers. The horizons in terms of opportunities to serve your fellow men are as broad or broader than they have ever been, and the challenges ever more numerous and diversified.

I wish each of you a good, happy and useful life in the practice of your profession and in your new role in society.

Room 411, Jackson Building

The Burlington Orthodontic Research Centre: A Measure of its Role in Dental Public Health

EGIL P. HARVOLD,* D.D.S., Ph.D.

and MARGARET E. HATTON,† Ph.D., Toronto, Ontario

Although opinions differ as to the exact percentage of Canadian children who stand in need of orthodontic therapy, nevertheless, there is complete agreement in all quarters that the number is sufficiently large to be staggering. Moreover, not only does the ever increasing size of the population of the country itself aggravate the situation, but also the ever increasing demands of an affluent society for attendance on these problems tend to bedevil the issue even further. Clearly, from the public health point of view no solution could possibly be expected to come from the few dozen or so specialists who are being trained each year. On the other hand, if the sagacity of the truism "Prevention is better than a cure" were properly recognized, an overall and general improvement in this critical situation might well be expected. Indeed, although it is inclined to be overlooked, the part which the general practitioner might fulfil in preventing the development of defects should be quite considerable. The existing need is for an accurate evaluation of the characteristics of normal and defective occlusion as they appear in the process of growth and development, in order that expressions of incipient malocclusions might be recognized. Directly

related to this evaluation is the further need for determining the best practical methods for preventing the development of defects. Once this quite essential body of material is accumulated the next logical step is its dissemination to the general practitioner. Acquiring this foundation material is the aim of the Burlington Orthodontic Research Centre.

AIMS OF THE CENTRE

Initiated in 1952, the project has three main aims. First, to assemble a library of records including cephalometric radiographs, dental models, medical and dental history, carpal radiographs, photographs, and family pedigrees of a representative group of children; second, to assess the relative roles of hereditary and environmental factors in governing the maturation of the cranio-facial complex; third, to evaluate the relative efficacy of preventive-interceptive orthodontic procedures.

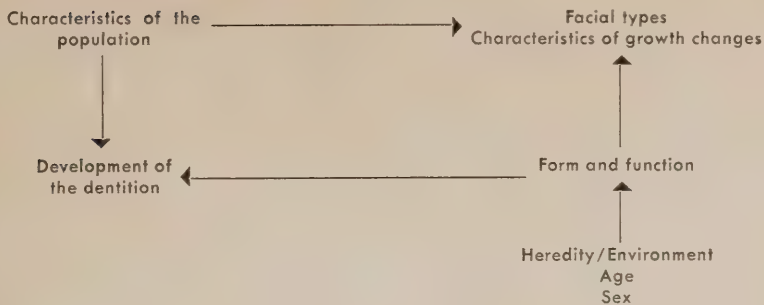
The library of records now accumulated in the clinic's files provides a rather unusual opportunity for a variety of observations. The different areas of investigation are summarized on the following page. This summary includes specific studies in epidemiology, morphogenesis and genetics.* The first of these, epidemiology, provides valuable information regarding the frequency of symptoms and syndromes of such features as missing and lost teeth, crowding and spacing, habits, and other

*Former chairman of the Department of Orthodontics, Faculty of Dentistry, University of Toronto, and director of the Burlington Orthodontic Research Centre. Now at the Tandlaegehojskole, Aarhus, Denmark.

†Senior research fellow, Burlington Orthodontic Research Centre, and special lecturer, Department of Zoology, University of Toronto.

The project is financed by a grant in aid from the National Health Grants program through the Department of National Health and Welfare. It is administered by the Faculty of Dentistry, University of Toronto.

*A review of studies which have either been completed or which are in progress is shown at the end of this paper.



Areas of investigation at the Burlington Orthodontic Research Centre.

functional disorders. The second type of evaluation, morphogenesis, involves determinations of the possible association between certain anatomical expressions including those of the cranio-facial complex, the wrist bones and the whole process of eruption. The effects sustained by growth and maturation on these phenomena must be assessed and then related to the development of defects. Finally, studies aimed at evaluating hereditary factors governing the morphology of the skeleton and the teeth are particularly valuable from the point of view of aetiology.

Since an evaluation of the relative merit of preventive measures creates the basic core of this matter, to clarify the characteristics of growth as the individual passes from infancy to adulthood is of prime importance. Questions as to the nature of the symptoms of a real problem as opposed to symptoms of a passing phase in maturation can only be derived from a long range study of the same individuals. Cross-sectional material may be useful as a source of comparison at various ages, but it must be obvious that only serial material will provide the continuity essential to an evaluation of the growth process. Furthermore, it cannot be over-emphasized that preventive-interceptive measures do, in fact, begin with the proper scrutiny of the parents, possibly grand-

parents too, and for this reason considerable emphasis has been laid on the collection of family records.

From the point of view of dental public health, the immediate questions may be summarized as follows:

1. Do certain cranio-facial characteristics occur with greater or lesser frequency in this population?
2. Are certain of these facial characteristics associated with malocclusion? That is to say, do certain traits predispose an individual to a malocclusion?
3. As maturation progresses, can sex differences be identified in characteristics of occlusion?
4. What is the frequency of malocclusion at the different age levels, or at different stages of maturation?
5. What is the mode of inheritance of certain cranio-facial characteristics?
6. If certain traits can be recognized as symptoms of real problems, what are the best practical preventive-interceptive measures?
7. Are there in fact certain types of growth patterns which may be described as transcending preventive-interceptive measures?
8. What is the frequency of this latter type (7), and also of (6)?

Although these eight problems cover the main areas of enquiry, only the first three will be dealt with here; the five lat-

TABLE 1 Number of annual records of serial sample.

Year	Age in years							
	3	4	5	6	7	8	9	10
1958-1959	238	307	294	284	206	140	87	1
1959-1960	238	307	294	284	273	260	193	71

ter questions will be dealt with in subsequent papers by these and other investigations.

THE TOWN, THE SAMPLE AND THE RECORDS

Situated on Lake Ontario, the town of Burlington is serviced by super-highways and is within easy reach of Toronto, Buffalo and Rochester. The large industrial city of Hamilton shares a common boundary. Burlington is attractive and has the air of a flourishing community. At the inception of the project in 1952, the population was approximately 6,500. As the census of Canada 1951 shows, the town is located within the region which supports the greater portion of Ontario's population, which in turn comprises 40 per cent of the national population.

The 1,200 children (this excludes sibling material) whose parents consented to their participation in the study, fall into five age groups, viz. three, six, eight, ten and twelve years, and represent approximately 90 per cent of the child population of the town in these ages.

As has been shown in Progress Report Number 4* this sample is essentially rep-

resentative of the Canadian population. Whereas the six, eight, ten and twelve-year old groups constitute the control sample, the three-year old group makes up the serial sample. The children of this latter group are seen annually for records. In addition, each child's condition is reviewed by the staff at the monthly meetings and when necessary treatment is discussed and a plan prescribed. Treatment is carried out by almost all staff members and those cases being treated are reviewed at regular intervals by all the staff. The children in the control groups are also observed and their condition and needs discussed with their parents. Since they are not included in the preventive-interceptive program, these cases comprise the controls with which comparison of the treated cases may be made.

Up to the end of October 1960, the number of annual records of children making up the serial sample was as shown in Table 1.

The number of control records were as shown in Table 2.

*Progress reports have been published annually since 1956 and are available from the libraries of all the leading dental schools in Canada and the United States.

TABLE 2 Number of control records.

Year	Age in years							
	6	8	9	(6) *	10	12	(6) *	(10) *
1958-1959	303	222	257		219	218		
1959-1960	303	222	262		219	218	85	16

*The figures in parentheses refer to the age at which the children made their first visit to the Centre. Thus, the original six-year old group has been seen at nine years and again at twelve years. This group, therefore, constitutes a second serial sample, but the members included receive no preventive-interceptive therapy.

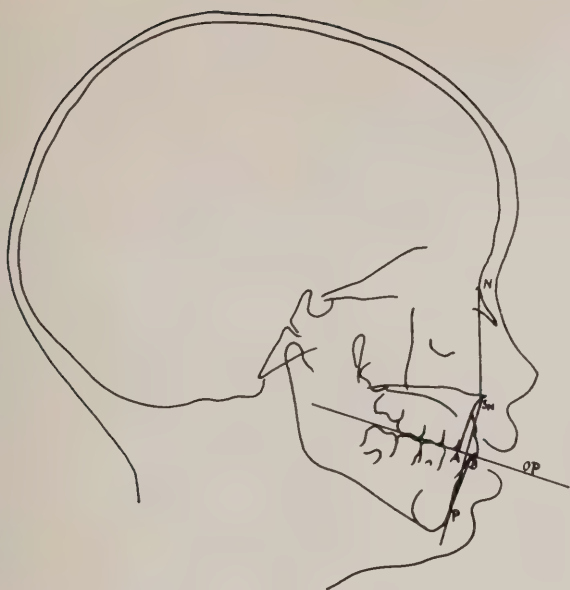


FIGURE 1

Apart from the serial and control cases, records of families are also being collected. The family study is organized in such a way that siblings are seen at the same chronological age for records. Whereas, a study of twins, of which there are many in the literature, facilitates a determination of the heritability values of certain traits, only a consideration of family pedigrees can reveal the mode of inheritance of certain traits. A determination of the way in which certain cranio-facial characteristics are transmitted, constitutes the main objective of the family study in Burlington. Moreover, since the children are seen at the same chronological age, an evaluation of maturational change within families and between families is also to be undertaken. Included in this part of the study are 175 families with a total of 352 children.

Cranio-facial Characteristics as Predisposing Factors in the Development of Malocclusion

One of the many primary uses to which

the library of records has been subjected has been an attempt to answer the first three questions previously listed. The sample on which this particular investigation is based includes the cross-sectional controls of six, eight, ten and twelve years. Each group contains approximately one hundred or more each of boys and girls. The primary objective here includes not only a determination of the frequency of certain cranio-facial characteristics at these four ages, but also whether or not certain profiles might correctly be regarded as being "malocclusion-type" profiles.

Using lateral cephalograms, measurements were made first, of profile angle (Figure 1) nasion, subnasale, pogonion; second, of the difference between the bony base of the lower incisors (supramentale) and that of the upper incisors (subnasale) projected on to the "functional" occlusal plane (Figure 1), and called the A-B difference. The word functional is of particular significance here and for this reason deserves comment.

▷ The Significance of the Functional Occlusal Plane

Although this particular investigation was aimed at analysing the morphological features of the cranio-facial complex and their possible bearing on occlusion, nevertheless, since occlusion is the outcome of the morphology and muscle activity, the effects of the latter must also be given due consideration. Although morphology may be a contributing factor in malocclusion it is only one side of the picture. The explanation lies in the fact that the mandible is slung by muscles from certain fixed bones of the skull and face, so that the level at which the teeth align themselves, that is, their occlusal inclination is not only the outcome of skeletal formation and the eruptive process, but also, the result of muscle activity and jaw movement. The level of the occlusal plane must, therefore, be properly regarded as a resultant or end product of eruption, and the bone-muscle system. Indeed, clinical observation can provide substantial evidence to illustrate the powerful effects of the neuro-muscular reflexes. It is not uncommon for a case with a normal occlusion to change quite dramatically into one with a marked malocclusion, and this with virtually no change in skeletal morphology. Thus, because of the nature of the masticatory apparatus, occlusion can only correctly be considered in the light of form and function and it is for this reason that the occlusal plane used in this study, is referred to as the "functional" occlusal plane. Its significance lies in the fact that it reflects or is sensitive to not only changes in facial morphology, but also changes in muscle activity. It is a line drawn along the occlusal surfaces of only the molars and bicuspid which have an unrestricted eruption and which have occlusal contacts with their antagonists.

The attitude that aims at solving problems of occlusion through various skeletal analyses may be criticized on the grounds that morphology, per se, supplies rather

inadequate information. The morphological characteristics of the cranio-facial complex and changes that accompany growth take on proper meaning only when due consideration is paid to their biological significance.

ANALYSIS OF THE DATA

In addition to the two cranio-facial traits, profile angle and the A-B difference, taken from cephalograms, two dental characteristics, crowding and antero-posterior dental arch relation, were obtained from the models. Crowding here included lack of space for tooth material present in any one or more of the quadrants of the arch.

Frequency distributions of profile angle are shown in Figures 2 and 3. As might have been expected, the angle increases in size as the jaws grow downwards and forwards. Although the central tendency for profile angle for boys and girls is much alike at all four age levels, the upper limits of the ranges, except at age ten years, are consistently greater for boys.

Frequency distributions for A-B difference are shown in Figures 4 and 5. The range in this characteristic for boys and girls at all four age levels is considerable. But perhaps the most significant feature to be noted is the change in the means for this characteristic for the different age groups. This mean value is smallest in both girls and boys at twelve years. On the other hand, profile angle increases between six and twelve years. Thus, although the jaws are actually growing downwards and forwards with the mandible becoming more protrusive, the effect of function more than compensates for this forwardly directed growth, inasmuch as the inclination of the occlusal plane is altered and with it, a change in the A-B relation is brought about. Indeed, B point does not fall in a more anterior position to A, but instead is placed in a more posterior position.

When the two characteristics, profile angle and A-B difference are tested for

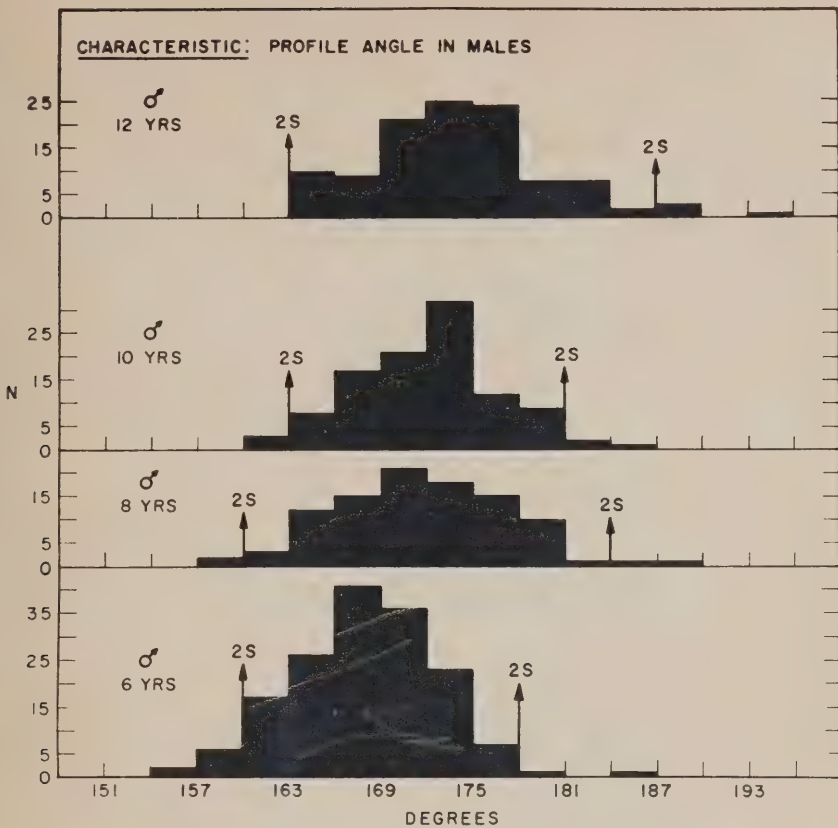


FIGURE 2 Cranio-facial characteristics in the Burlington population; profile angle in males.

TABLE 3 Values for correlation between profile angle and A-B difference in boys and girls.

Age in Years	Males			Females		
	r Value	Significance		r Value	Significance	
		5% level	1% level		5% level	1% level
6	+0.4310	Yes (0.16)	Yes (0.21)	+0.464	Yes (0.17)	Yes (0.23)
8	+0.4609	Yes (0.19)	Yes (0.25)	+0.259	Yes (0.17)	Yes (0.23)
10	+0.422	Yes (0.19)	Yes (0.25)	+0.330	Yes (0.19)	Yes (0.25)
12	+0.507	Yes (0.19)	Yes (0.25)	+0.488	Yes (0.20)	Yes (0.27)

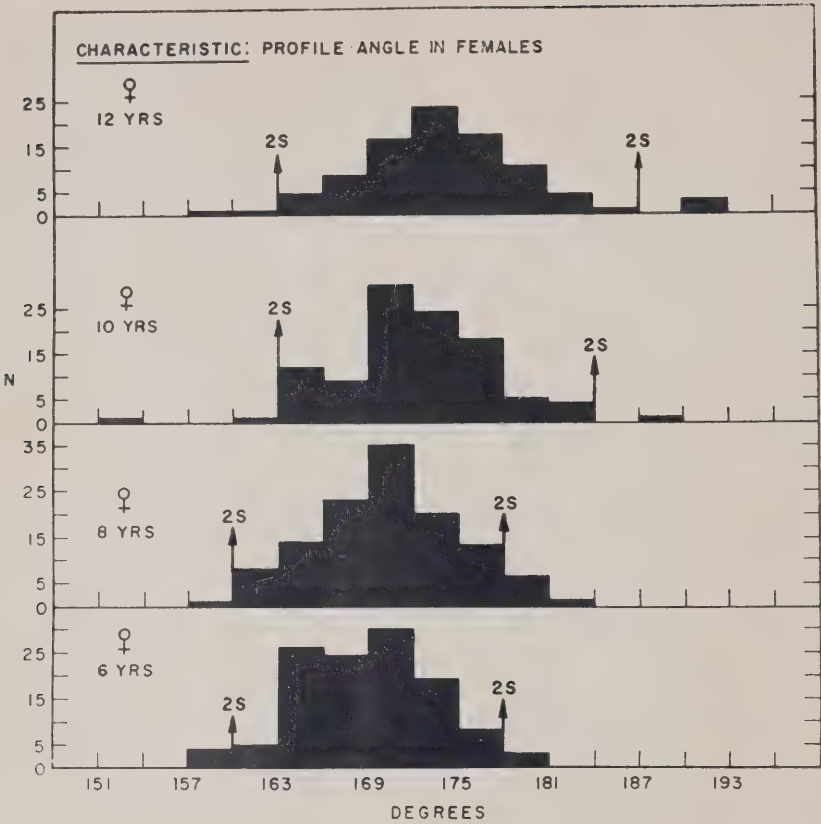


FIGURE 3 Cranio-facial characteristics in the Burlington population; profile angle in females.

possible correlation, the results obtained (Table 3) indicate that there is a positive correlation between the two at all four age levels in both boys and girls; concave-type profiles generally have mandibular protrusion of the alveolar process, whereas convex-type profiles are the reverse. Furthermore, as age increases, the correlation values increase; this would suggest that as maturation progresses, muscle patterns become more stable and this in turn is related to the changes in the eruptive process.

When the two common malocclusion manifestations, crowding and antero-posterior dental relation were related to measures of A-B difference, the results derived from chi-square analyses were those shown in Table 4. It may be noted that there appears to be a real association between crowding and an A-B difference smaller than the means at age ten years in both boys and girls; dental distocclusion and smaller than average A-B relation are associated at all age levels except in girls at ten years. A difference in the

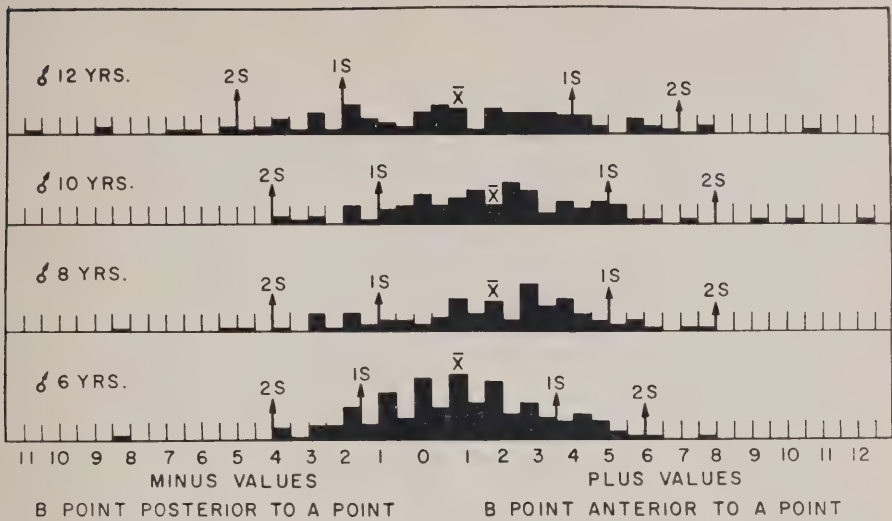


FIGURE 4 Cranio-facial characteristics in the Burlington population; A-B relation (the difference between the bony base of the lower incisors and that of the upper incisors) in males.

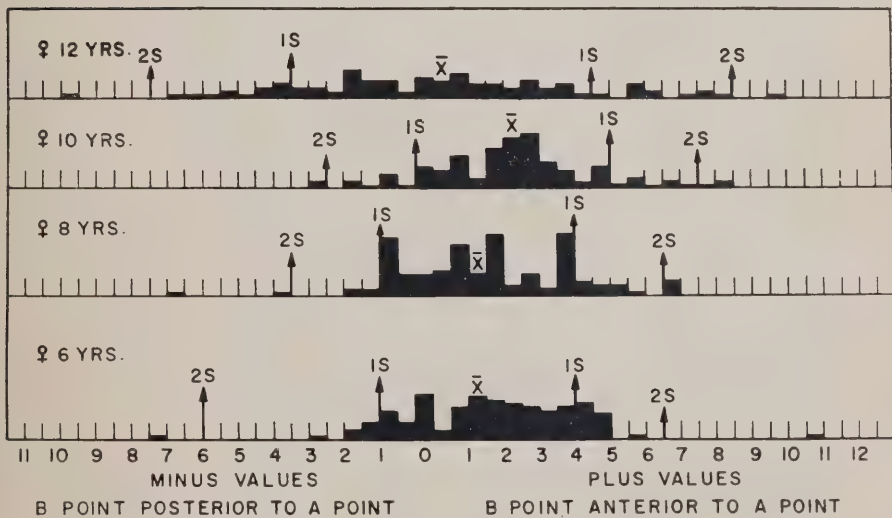


FIGURE 5 Cranio-facial characteristics in the Burlington population; A-B relation (the difference between the bony base of the lower incisors and that of the upper incisors) in females.

TABLE 4a Results of chi-square tests for possible association between A-B relation and crowding/no crowding.

Females			Males		
Limits of A-B	Age in years	Results	Limits of A-B	Age in years	Results
+2.0 mm. or less +2.5 mm. or more	8	No significant association $P > 0.10$	+2.0 mm. or less +2.5 mm. or more	8	No significant association $P > 0.70$
+2.5 mm. or less +3.0 mm. or more	10	Significant association $P < 0.05$	+2.0 mm. or less +2.5 mm. or more	10	Significant association $P < 0.01$
+0.5 mm. or less +1.0 mm. or more	12	No significant association $P > 0.30$	+1.0 mm. or less +1.5 mm. or more	12	No significant association $P > 0.30$

TABLE 4b Results of chi-square tests for possible association between A-B relation and neutroclusion/distocclusion.

Females			Males		
Limits of A-B	Age in years	Results	Limits of A-B	Age in years	Results
+2.0 mm. or less +2.5 mm. or more	8	Significant association $P < 0.02$	+2.0 mm. or less +2.5 mm. or more	8	Significant association $P < 0.01$
+2.5 mm. or less +3.0 mm. or more	10	No significant association $P > 0.08$	+2.0 mm. or less +2.5 mm. or more	10	Significant association $P < 0.01$
+0.5 mm. or less +1.0 mm. or more	12	Significant association $P < 0.01$	+1.0 mm. or less +1.5 mm. or more	12	Significant association $P < 0.05$

TABLE 5a Results of chi-square tests for possible association between profile angle and crowding/no crowding.

Females			Males		
Limits of P/A	Age in years	Results	Limits of P/A	Age in years	Results
171.0° or less 171.5° or more	8	No significant association $P > 0.50$	172.5° or less 173.0° or more	8	No significant association $P > 0.50$
173.0° or less 173.5° or more	10	No significant association $P > 0.70$	173.0° or less 173.5° or more	10	No significant association $P > 0.70$
174.0° or less 174.5° or more	12	No significant association $P > 0.50$	174.0° or less 174.5° or more	12	Significant association $P < 0.05$

Table 5b Results of chi-square tests for possible association between profile angle and neutroclusion/distocclusion.

Females			Males		
Limits of P/A	Age in years	Results	Limits of P/A	Age in years	Results
171.0° or less 171.5° or more	8	Significant association $P < 0.05$	172.5° or less 173.0° or more	8	Significant association $P < 0.02$
173.0° or less 173.5° or more	10	No significant association $P > 0.50$	173.0° or less 173.5° or more	10	No significant association $P > 0.30$
174.0° or less 174.5° or more	12	Significant association $P < 0.02$	174.0° or less 174.5° or more	12	No significant association $P > 0.10$

growth pattern of the mandible between boys and girls at this age level has also been observed in another study.

Finally tests were made to determine whether or not certain profiles were significantly associated with these two types of malocclusion. The limits for the values of the profile angles for the chi-square analyses were based on the mean values. The results are shown in Table 5. These indicate that except at age twelve years in boys, crowding has no significant association with the profile. However, boys at eight years and girls at eight and twelve years all showed some relation between the profile and antero-posterior dental relation. Profile angles, less than the mean size, were significantly more frequently associated with dental distocclusion.

Σ SUMMARY

Two features of the cranio-facial skeleton, profile angle, and A-B relation (the relation between the upper and the lower alveolar processes projected on to the functional occlusal plane) have been analysed in four representative groups of children, six, eight, ten and twelve years of age.

The frequency with which these two traits occur in the population has been expressed in histograms; the mean values and their standard deviations have also been determined.

In both boys and girls at all four age levels, the two traits have been shown to be positively correlated.

Two common malocclusion manifestations, crowding and distocclusion, were tested for possible association with A-B relation; crowding was found to be independent of this trait, except at age ten years. On the other hand, except at age ten years in females, distocclusion was significantly associated with smaller than average A-B relation.

Finally it was abundantly clear that whereas crowding of the teeth and profile angle are unrelated (except at age twelve in boys), on the other hand smaller than average profile angles are predisposed to developing distocclusion of the teeth.

CONCLUSIONS

The aims and organization of the Burlington Orthodontic Research Centre have been presented and one aspect of the research has been reported. This study, aimed at evaluating cranio-facial features as predisposing factors in the development of malocclusion is of twofold significance. First, results obtained serve to substantiate the view that although facial morphology has a bearing on occlusion it must properly be regarded as only one of two contributing factors. The effect of muscle activity on the functional occlusal plane is not inconsiderable and it too must be reckoned with. Second, the information on morphological features derived from this study of an (orthodontically) untreated group of children constitutes the base line with which similar observations derived from a treated (preventive-interceptive orthodontic therapy) group of children will be compared. The results of this comparison will be the subject of subsequent reports.

RÉSUMÉ

Le Centre de recherches en orthodontie de Burlington a été fondé à Burlington, Ontario, en 1952. Cet organisme se propose trois objectifs: (1) constituer une bibliothèque de dossiers comprenant des radiographies céphalométriques, des modèles, des histoires de cas médicales et dentaires, des radiographies carpiennes, des photographies et les histoires familiales de groupes représentatifs d'enfants; (2) évaluer l'influence des facteurs héréditaires et d'environnement sur la maturation du complexe cranio-facial; (3) juger de l'efficacité des méthodes d'orthodontie préventive. Ces recherches, pour évaluer les traits du crâne et de la face comme facteurs prédisposants des malocclusions, atteignent deux buts. D'abord, les résultats servent à prouver la théorie que la morphologie de la face, même si elle a une influence sur l'occlusion, n'est qu'un des deux facteurs responsables. La traction musculaire sur le plan occlusal fonction-

nel est importante et il faut en tenir compte. Deuxièmement, les renseignements obtenus, grâce à ces recherches, sur les traits morphologiques d'un groupe d'enfants qui n'ont pas reçu de traitements d'orthodontie, constituent un point de comparaison pour un groupe d'enfants qui ont reçu des traitements d'orthodontie préventive et chez qui on a recueilli des données semblables. Les résultats de ces comparaisons feront l'objet de rapports à venir.

STUDIES UNDERTAKEN AT THE CENTRE

EPIDEMIOLOGY

1. Grainger, R. M. Interrelations of Malocclusion Manifestations and Aetiologic Factors. (Presented at the annual meeting, I.A.D.R. 1961.)
2. Hunter, W. S. Tooth Size, Spacing and Crowding, Arch Relationships and Arch Dimensions in Six and Nine Year Old Children.

MORPHOGENESIS

3. Bimm, J. A., Elsner, D. A., and Ibanez, C. R. A Study of Gonial Angle and Mandibular Length in Normal and Cleft Palate Children. (Thesis)
4. Coupe, B. The Morphology of the Nasal Septum Area in Cleft and Non-Cleft Children. (In process for M.Sc.D. thesis).
5. Estrada, F. M. Flores. A Study of Mandibular Tooth Movement and Evaluation of Symmetry in Length of the Mandible and Mandibular Tooth Position.
6. Fisk, R. The Relationship of a Weight/Height Index to the Total Number of Erupted Canine, First Bicuspid, Second Bicuspid and Second Molar Teeth in a Sample of Ten Year Old Children.
7. Hamilton, R. Tooth Position in the Human Mandible.
8. Harvold, E. P. and Hatton, M. E. Cranio-facial Characteristics as Predisposing Factors in the Development of Malocclusion. (Presented at the

Annual Meeting I.A.D.R. 1961 and requested for publication.)

9. Hatton, M. E. The Relation between Intra-Alveolar Tooth Movement and Clinical Eruption.
10. Idem. Some Characteristics of Eruption in Neurotrochusion and Class II Malocclusion.
11. Landsberg, R. A Study of Cephalometric Reference Planes Used in Recording Anteroposterior Denture Base Relationships. (M.S. thesis)
12. Latif, H. (assisted by Boyko, R.) An Electromyographic Study of the Temporalis Muscle.
13. Mader, F. H. Functional Occlusal Plane and Some Cranio-Facial Characteristics.
14. Mitchell, B. A Study of the Dento-Facial Morphology of a Group of Three Year Old Children with Class II Div. 1 (Angle) Malocclusion (with a Suckling Habit). (M.S. thesis)
15. Peloso, P. A Study of Some Cranio-Facial Characteristics (thesis for Diploma in Orthodontics)
16. Perry, R. A Lateral Cephalometric Study of the Dento-Facial Morphology of Three Year Old Children having Normal Occlusion and Distocclusion (Without Habits). (M.S. thesis)
17. Popovich, F. The Incidence of Sucking Habits and Its Relationship to Occlusion in Three Year Old Children.
18. Posen, A. L. Vertical Height of the Body of the Mandible and the Occlusal Level of the Teeth in Individuals with Cleft and Non-Cleft Palates.
19. Ross, B. R. Cranial Base and Cranial Vertebrae in Cleft Palate. (In progress for M.S. thesis)
20. Scott, L. Extraction of Deciduous Cuspid to Facilitate the Eruption of the Permanent Incisor Teeth. (Presented at the Annual Meeting of the A.A.P. 1960)
21. Spracklin, R. An Investigation of the Natural Occlusal Plane for Deciduous Teeth and the Variation of the Individual Occlusal Plane from Average Estimates by Age and Sex.

GENETICS

22. Allan, D. N. An Electromyographic Evaluation in Monozygotic and Dizygotic Twins of the Right Temporalis Muscle. (M.S. thesis)
23. Hatton, M. E. An Evaluation of Hereditary Factors in Cranio-Facial Development.

RELIABILITY OF TECHNIQUES EMPLOYED

24. Hatton, M. E. and Grainger, R. M. Reliability of Measurements from Cephalograms at the B.O.R.C. J.Dent.Res. 37:5, 85:3 1958.

124 Edward Street

First Woman Dentist • Emma Gaudreau (Mme H.-Edmond Casgrain), first woman dentist in Canada, was licensed to practise by the College of Dental Surgeons of the Province of Quebec on April 8, 1898. Dr. Gaudreau practised in Quebec until 1920, dying on October 7, 1934 at the age of 73.

La première femme dentiste • Emma Gaudreau (Mme H.-Edmond Casgrain), épouse, sœur, tante de dentistes, fut licenciée par le Collège des chirurgiens dentistes de la province de Québec le 8 avril 1898 et mourut à Québec où elle avait exercé sa profession, le 7 octobre 1934, âgée de 73 ans.

SPECIAL ARTICLE

New Developments in Education

D. C. WILLIAMS,* M.A., Ph.D., Toronto, Ontario

Broadly speaking, there are two aspects to be considered when one examines the question of new developments in education. These are: (1) the constant examination and revision of the curriculum, a process that characterizes new developments within the educational system, and (2) changes in society which, although outside the system, none the less profoundly affect it. I propose to spend some time on both aspects. Since educators are neither passive nor somnolent, I will record some of their concerns. But since, as well, they are not omnipotent, it is important that we also record a sampling at least of those forces from without that have significant implications for education.

Let us turn first then, to developments within the educational citadel itself. Here the tradition is conservative and the rate of change slow; yet there is always a ferment about the curriculum. One example of this is the growing interest in new methods of teaching mathematics. These new notations and systems are regarded by conservative teachers as 'impossible for the young to grasp' and by the more venturesome and progressive as 'readily assimilable by minds uncon-

taminated by the bad teaching of outworn and difficult concepts'. Two examples will suffice. At the beginning of the child's experience in public school one wonders how often insistence on the orthodox, 'correct' methods of solution have been taught at the expense of developing creative imagination, interest, and mathematical ingenuity. I think of the example of the six-year old son of one of my colleagues at the University. This boy *likes* arithmetic, and in Grade 1 did 'number stories' in which he obediently drew five maple leaves and matched his artistic creation with the digit 5. At home, however, he asked his twelve-year-old sister to give him 'hard ones'. She, thinking to put him in his place, finally asked, "What is 29 and 29?" To his father's astonishment he got the right answer and, when asked how he did so, he replied, "Everybody knows 30 and 30 is 60, and if you take 2 off that leaves 58." A good teacher would of course encourage such ingenious, creative shortcuts but a poor one will not only discount the achievement because of its unorthodoxy, but decide into the bargain that the comment "Everyone knows that 30 and 30 is 60," is the trademark of impertinence. The resulting discipline, freighted with the heavy sarcasm to which the young are so vulnerable, will, I suspect, strait-jacket imagination and convert lively interest into mechanical, dull but orthodox, routine. How often do we sacri-

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Luncheon address delivered before the annual meeting of the Ontario Chapter, Canadian Society of Dentistry for Children, Toronto, May 20, 1961.

fice development of penetrating understanding for the mindless memorization of rules which produce 'right' answers!

Not all of you, I hope, have heard the story of the two kindergarten children who, during recess, were arguing about the identity of an aeroplane that passed high overhead. They finally agreed that it had to be a jet because of its contours, either a DC 8 or a 707, and spent a few moments discussing the superior thrust of jet engines over their propeller-driven counterparts. As the bell to end recess sounded, one turned to the other and said, "Well, let's go back in and string some more of those damn beads."

At the other end of the public school span we can cite the growing concern about the place of Grade 13 in the high school curriculum. It has been described as a heavily overloaded year affording neither opportunity for the teacher nor education for the young—as too much after too little—as exhausting drudgery coupled with acute anxiety and administrative inefficiency. The lively and continuing debate thus provoked involves the provincial department of education, high schools, school boards and universities. What should be done? The suggestions range from proposing its outright abolition, through the suggestion of a complete reorganization of the whole high school curriculum, to making Grade 13 a scholarly experience, a transition from the status of high school pupil to that of university student. The constant concern with curriculum extends, of course, to the university as well, and is reflected at the University of Toronto in the recent change of name to a Faculty of Arts 'and Science', in the recent establishment of the General Course in Science, and in the current proposals to modify the curriculum in Arts as well. Nor can I omit mention of the growing community interest in University adult education. Since 'Sputnik' it has been possible to mention at a cocktail party that one is taking an Extension course without producing raised eyebrows and pained, condescending surprise. The Extension Division is too the place par excellence where experimentation in uni-

versity education can be tried. It provides, for example, opportunities for members of the university staff to express and develop those scholarly interests they have for which no provision is made in the course of their regular teaching duties. I think, for example, of the professor of Hebrew whose lively interest in the new science of linguistics could only find expression in Extension. These are but a few examples of the intellectual ferment within the formal educational system.

Let us turn now to a similar sampling of developments in society at large which have their effects on education. Perhaps the first point to note is that the classic 'rural-urban' dichotomy which has for so long characterized the Canadian scene is today largely irrelevant. The 'rural' countryside, with its network of roads and super-highways, is now a suburb or exurb. Again the city itself is hardly recognizable as such any more. Toronto, for example, is a metropolis grimly determined to be a 'megopolis,' if there is such a word; a vast concentration spreading like a cancer across the graceful rural acres. Within a decade or so we face the melancholy prospect of a dense population concentration spreading along the lake shore from Oshawa to Hamilton, northward to Barrie. How will education adapt itself to this concentration? What will happen to the tradition of the small independent school boards? There are over 3,000 of them in Ontario at present. Can they maintain their individuality and efficiency under such circumstances? Clearly they can't, but what kind of substitute should we be developing before this lands on our doorstep?

Inevitably this curse of bigness brings with it the growth of bureaucracy, the development of service and specialist occupations with a consequent increasing dependency on the part of the city dweller on the services of these specialists. He becomes at once more educated and more helpless. The educator may well ask himself the question, "Who is going to train whom for what?" "How?" "Where?" "When?" We see already the impact of this urban growth on the family, in the

growing number of working mothers, the clear evidence that broken homes and lack of supervision complicate the problems of the school, since it must deal with those belligerent children whose attitudes have been shaped by these forces.

The impact of automation is already with us. The automation of agriculture is a grim necessity since in the space of a few decades we have changed from a country two-thirds of whose population were rural to the present two-thirds urban ratio. This means in short that today half the rural food growers must, and through automation do, produce for twice as many urban dwellers, and this does not even take into account the tremendous growth in population over those same decades.

Canada's labour force is woefully untrained by today's rising technological standards. Unemployment rises while the 'want ads' of the newspapers are full of opportunities for *trained persons*. We can no longer afford to train people for jobs that are rapidly becoming obsolete. In recent decades we have solved our need for skilled tradesmen by immigration. It has been estimated that since the war we brought in about 100,000 skilled tradesmen while we produced about 20,000 of our own. Do we then, still depend on Europe to provide our technical skill? If not, when do we begin to train our own?

The rapid growth and immense influence of the mass media of communication challenge education at every point. The age of the mass media began with the invention of movable type in the 15th century, and the resulting impact of the popularization of the book is associated with the end of feudalism, the dawn of democracy and the achievement of universal education. A new 'culture' emerged so that for us culture and literacy are now synonymous, and formal education is, of course, dedicated to this proposition. But we have had time, some four centuries of it in fact, in which to assimilate those

changes. Contrast this with the developments of the mass media in the last fifty years, years which have witnessed the advent of the telephone, telegraph, photograph, the modern newspaper and magazine, the motion picture, gramophone and radio, culminating now in the advent of television. In about the same time parallel developments in roads, vehicles, super-highways and air transport now reach their culmination point in space rocketry. We live, as one of my colleagues puts it, in a 'global village'. Never was so much done so rapidly for so unprepared a populace. Inevitably the staggering adaptations these changes demand are universally perceived to be challenges to education. How is education to meet these challenges? With the advent of television, education has the opportunity really to explore, to respond to the notion of the classroom without walls. How extensive (or expensive) will it be? How effective will it be? How does it differ from audio-visual aids? What is unique about it? Is it a substitute for the teacher or a supplement—a threat or a lifesaver? Whether we do anything formally about it or not, what of television's effects on our children? They spend as much time before it as before either their teachers or their parents—yet its effect is to produce *more* not less reading, even as radio instead of ending the gramophone, as was freely predicted a few years ago, produced a boom in record collecting.

I have then only touched on a few of the problems education faces in the new world. Some of these are, as we have seen, vigorously and deliberately originated within the educational system, others, as is equally apparent, unwittingly and impersonally springing from profound social and technological change. Both types demand appropriate response from education. We will be affected profoundly whether we like it or not. Our challenge is that we address ourselves to the shaping of our destiny.

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RESEARCH ANNOTATIONS

ORGANIZATION OF DENTAL RESEARCH IN CANADA

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The dental research program in Canada formally began in 1920 with the establishment of the Canadian Dental Research Foundation. The capital funds of the Foundation were raised by voluntary contributions from dentists and dental organizations across the country, and interest from this money provided the only continuous financial support for dental research for the next twenty-four years. In 1944, the Canadian Dental Association recognized the need for more trained research personnel and established studentships to help support dentists or dental students while they obtained research training. Each year since then the Association has provided money for this purpose. In 1945, the Associate Committee on Dental Research was established as one of the advisory committees of the National Research Council, and the National Research Council has now become the largest supporter of dental research in the country. In addition, financial support for dental research is provided by the Department of National Health and Welfare through its extra-mural grants program. Both the Department of National Health and Welfare and the Royal Canadian Dental Corps support programs of intra-mural dental research. Some support has also been received from industry, philanthropy and voluntary contributions from dentists.

Summaries of reports delivered at the First Canadian Conference on Dental Research held at Toronto, October 30-31, 1961.

The growth of dental research has been great, particularly since 1945. In the sixteen years 1945-61, funds for dental research have increased by seventy times (\$3,500 - \$250,000) and numerically research personnel have increased from one or two, to about thirty, most of whom are trained research workers.

However, dental research still falls far short of what is necessary for this country, and if it is to continue growing, a number of things are required. First, we need a central agency to co-ordinate efforts, and the Canadian Dental Research Foundation would seem to be the logical organization for this purpose. More research personnel must be recruited initially through stepped-up recruitment efforts for dental schools, and then by research counselling among the undergraduates. We need more dental schools to provide the establishment for more research workers. We must provide time for the researchers in the schools to do research. We need more full-time career research investigators on the staff of the schools. We must maintain adequate research space in the present schools and be certain that sufficient space is provided in new ones. Perhaps we should start planning to establish a Canadian Institute of Dental Research. Finally, we should consider establishing a Canadian Association for Dental Research with a view to having it eventually form part of the Canadian Federation of Biological Societies.

If dental research in Canada is to continue to grow, and it must, then these things and more must be done, and the research workers must provide the stimulus and leadership to do them.

THE EFFECTS OF A DOSE OF 2,000 ROENTGENS OF X-RAY IRRADIATION ON THE GROWTH OF THE JAWS IN KITTENS

W. B. Donohue, Faculty of Dental Surgery, Université de Montréal, Montreal, P.Que.

Twenty-one kittens of from three to four months of age were subjected to a localized dose of 2,000 roentgens of x-ray irradiation. This was given in two doses, seven days apart, and both sides of the skull were irradiated. The bodies of the animals were protected by a lead box.

One group of animals received injections of alizarine red S at regular intervals, in addition to the irradiation.

The experimental animals and their controls, were sacrificed at post-irradiation periods of from two months to one year. The skulls were sectioned in the sagittal plane, examined radiographically, demineralized, and histological sections prepared. Ground sections were prepared in cases where the animals had received injections of alizarine red S.

Following irradiation, the histo-differentiation of the odontoblasts ceased, they became fewer in number, and reverted to a low cuboidal type cell.

These altered odontoblasts were associated with the formation of a primitive type of dentine or osteodentine. The odontoblasts that underwent differentiation before the animal was irradiated continued to form normal dentine at a nearly normal rate.

When the x-ray irradiation was administered during the root forming stage of the teeth, morpho-differentiation and histo-differentiation ended abruptly. However, when the teeth were irradiated during their crown forming stage, the coronal portions completed their development before growth in length ceased.

In many instances, these rootless teeth erupted into the mouth.

The cessation of morpho-differentiation was associated with a gradual sealing off of the pulpal tissues by osteodentine. This bony tissue sealing the pulp, was frequently

formed around a nidus of dystrophic calcification.

All of the irradiated animals showed a gingival inflammatory response. In several instances, this was associated with a partial cervical resorption of some of the permanent incisor teeth. Frequently firmer areas of dental resorption became overlaid with bone, with a resultant ankylosis. Ankylosis of some of the teeth, was a common feature in all of the experimental animals that survived eight months or more.

Lateral skull radiographs, taken following the sacrifice of the animals, were compared by measuring the distances between specific points on the films. A significant difference in the dimensions of the jaws of the experimental and control groups was noted.

A COMPARISON OF CRANIO-FACIAL CHARACTERISTICS IN TREATED AND UNTREATED CASES AT THE BURLINGTON ORTHODONTIC RESEARCH CENTRE

Margaret E. Hatton, Faculty of Dentistry, University of Toronto, Toronto, Ontario

Unlike the highly selected groups of individuals which comprise the orthodontist's practice, the material on which the Burlington project is based provides rather unusual opportunities for study. First, the overall material is, for the most part, representative of the population; second, the serial samples enable one to observe changes in maturation both in children receiving preventive - interceptive treatment and those undergoing no such therapy. Third, the family records provide the means of evaluating the consequences of hereditary and environmental factors.

This paper presents, first, a brief summary of the six different samples making up the clinic's library of records. Second, frequency distributions for six cranio-facial characteristics, viz., facial angle (na-

sion, subnasale, pogonion); A-B difference (the difference between the bony base of the lower incisors and that of the upper incisors projected onto the functional occlusal plane); arch relation (distomesio-neutroclusion); crowding, overjet and overbite have been established for four *control* groups of boys and girls at ages of six, eight, ten and twelve years. These results have been compared with those derived from serial material of boys and girls, six and eight years. This latter group has been called *experimental* since the affected cases in it have received preventive-interceptive treatment and thus differ from the four *control* groups which received no such attention.

The results of comparing the percentage frequencies of the four dental defects show marked differences between boys and girls in both control and experimental samples. In the controls, girls at the age of ten years show a decided drop in inharmonious arch relation, overjet and overbite; boys on the other hand show a reduction in only inharmonious arch relation and this at the later age of twelve years. Moreover, girls at twelve years indicate an increase in all four symptoms. A comparison between controls and experimental *overall* samples at eight years indicates that all four defects were reduced in their frequency in *girls* at this age; boys show a reduction only in crowding and overbite.

Although comparisons have been made between the overall control and experimental samples, both groups are in fact limited as to their true "experimental" and "control" nature. Obviously only the affected cases in the serial sample have been treated and clearly, some individuals in the controls have had private treatment. For these and other reasons care must be exercised in drawing conclusions based on comparison between the two groups at this stage, lest they be assigned a spurious interpretation.

A STUDY OF THE MORPHOLOGY OF THE GLENOID FOSSA

A. Demircioglu, *Faculty of Dental Surgery, Université de Montréal, Montreal, P.Que.*

A study of the details of the shape and dimensions of the glenoid (mandibular) fossa was undertaken, using 261 skulls (200 male, 61 female) representing nine different racial groups as material. The morphology of the fossa has been compared with other anatomical structures related to either the dental apparatus or to the cranium.

It was found that, contrary to previous reports, the depth of the fossa was significantly shallower in female skulls than in males. There were also morphological differences on the basis of racial origin, although they were not as marked as was the sex difference.

Of the three dimensions of the fossa (depth, width and length), the depth was the most independent measurement and was less related to measurements of the skull than were either of the other two dimensions. There was no significant correlation between the depth of the fossa and either the degree of overbite, or the degree of wear of the teeth. This latter observation also differs from previous published reports.

Furthermore, there was no correlation between the depth of the fossa and the size of the lateral pterygoid plate, although both the size of this plate and the length of the infra-temporal spine (which forms an attachment for the lateral pterygoid muscle) were related to the degree of dental wear.

It was found that the most lateral part of the articular eminence was more prominent in older skulls, which may explain previous reports that the fossa depth increases with age.

EDITORIALS

Private Practice: Cornerstone of Dental Care

"Treatment should be rendered in the private office of the dentist except where this is not practical". This is a basic principle which the Canadian Dental Association has reiterated in several policy statements. It is probably the most important single element of Association policy from the standpoint of the nation's fifty-eight hundred practising dentists, and it constitutes a basic premise in the brief now being prepared by the Association for the Royal Commission on Health Services.

Several valid reasons may be advanced in support of this position without in any way detracting from the excellent services rendered by many salaried dentists in clinics or other institutional service.

In the first place, the very low utilization rates experienced by government subsidized dental care programs for beneficiaries of provincial public assistance in Alberta, Ontario and Saskatchewan provide ample evidence that the mere removal of economic barriers does not ensure intelligent utilization of treatment resources. On the contrary, uncontrolled provision of free dental care to school children has repeatedly stimulated demands for terminal treatment, the most costly and time-consuming component of dental care and one which does nothing to decrease or eliminate recurring and cumulative treatment needs.

Clearly, the militant demand for free dental care which seems to mark the

trend of the day, is based on gross oversimplification and misconception of the real facts, for without a deep appreciation of the values of dental health, any attempt to improve the dental health of the public is doomed. A personal contribution by recipients toward the cost of services received has long been recognized as one of the most effective methods for achieving recognition of otherwise intangible values and this concept deserves to be retained in any plan for dental care, whether it be prepaid, postpaid or otherwise.

For if free dental care financed entirely without premiums out of consolidated tax revenues is difficult to reconcile with the principles of private practice and fee for service, it is entirely incompatible with that measure of participating consumer responsibility which differentiates the true dental health program from patching teeth. Yet this is blithely overlooked by those who clamour most vociferously for the assumption of complete responsibility by government. They see but one solution—free treatment provided by salaried dentists. Regrettably and mistakenly, they have little use for private practice, fee for service, co-insurance, and the like.

Much has been said and written about the relationship between quality of dental care and the administrative system under which services are furnished. While it is unwise automatically to impute lower

standards of care to a public service operated by salaried individuals—indeed there is evidence to the contrary—nevertheless some compulsory supervisory mechanism and some measure of regimentation must be built into such a system to compensate for the degree of personal incentive which is necessarily sacrificed. Yet surely no compulsory system, however wisely administered, can equal the services willingly rendered by mature, responsible private practitioners, conscious of their obligations to society, aware that their services are subject to critical evaluation by their patients as well as by the community at large, and voluntarily supervising their standards of practice through established agencies of the profession.

The personal relationship between a patient and his dentist has long been recognized as an important contributing factor to the utilization and quality of dental care. Proper initiation of the young child to the professional care and supervision of the dentist, periodic re-examinations and maintenance care, and the establishment of a patient-dentist relationship founded on mutual trust and confidence have been repeatedly stressed as the hallmark of a family dental practice. While one cannot deny the possibility of a similar relationship in salaried public treatment service provided in dental clinics, its attainment in this setting is far more difficult in actual practice. There is no doubt whatever that the environment of a private practice is far more conducive

to the type of relationship under consideration.

Dental practices collectively represent a substantial capital investment on the part of Canada's dentists. In a broader sense they also constitute a capital asset for the public at large. The creation of a nationwide salaried public treatment service alone, with transfer of existing personnel to new clinic facilities which duplicate the private practices already in existence, does not ensure improvement in either the quality or quantity of care. Other factors of far greater importance contribute to the volume of care—among them, the number of dentists, the degree of utilization of dental auxiliaries, the relative efficiency of clinical procedures and the rational utilization of preventive and corrective measures.

Clearly, no government can afford to embark blindly on a scheme subject to so many shortcomings. By the same token, the dental profession must demonstrate its primary concern for the public interest in clear and unmistakable terms and take whatever action is required to meet legitimate public aspirations. Implicit in this obligation is the need to provide more good dental service to more people at reasonable cost and create suitable physical and economic mechanisms for this purpose. Mere condemnation of alternative systems coupled with a hard-boiled "It's up to the public to find the means of paying" attitude will only earn for the profession the justifiable resentment of the public with all the hazards that such a turn of events entails.

John B. Macdonald, President of the University of British Columbia

Dentists throughout Canada will welcome the selection of Dr. John B. Macdonald as president of the University of British Columbia. A prominent dental

educator, administrator and investigator, he is the first dentist ever to be appointed to such high academic office.

Dr. Macdonald has had a distinguished

career, first as chairman of the Division of Dental Research at the University of Toronto's dental faculty where he also served as professor of Bacteriology, and latterly in the dual appointment of director of the Forsyth Dental Infirmary and professor of Microbiology at Harvard University.

His service to dentistry has embraced professional dental practice, research and teaching, but it is as a leader in dental education that he is perhaps better known. His recommendations for the establishment of a dental school at the University of British Columbia, first published in 1956 as *A Prospectus on Dental Education for the University of British Columbia*, marked him as a leader in promoting new concepts of dental education. The concluding paragraph of that report reveals the true depth of his perception:

"To meet the public health problem the emphasis must be placed on prevention. This can be done by a profession thoroughly trained in the biological sciences. Men with this kind of background will understand the dental public health problem. They will be trained to take advantage of all that is known today about prevention. They will use ancillaries to the best advantage of the public. They will be the source of the research scientists who will develop new and improved methods of prevention and of the teachers who will help to maintain high standards of service to the people."

The dental profession is proud that one of its members who has made an indelible impression on his associates now embarks on a new career to "leave a mark upon his time and his country that the passage of the years will further illuminate." To Dr. Macdonald we extend congratulations and best wishes on his new appointment.

BUREAUX, COMMITTEES AND COUNCILS

Comments on the Survey of Dentistry in the United States: 1. Dental Public Health

Council on Public Health

The Council on Public Health of the Canadian Dental Association has reviewed the report of the Commission on the Survey

This article is the first in a series of four to be published in this and subsequent issues of the *Journal of the Canadian Dental Association*. The series is of particular interest in view of the current hearings of the Royal Commission on Health Services.

of Dentistry in the United States and is in broad agreement that the recommendations within the chapter entitled "Dental Health" are, in most instances, equally applicable in Canada today.

At this time the dental public health problem in the United States is closely akin to

that now prevailing in Canada — “the unnecessary and untreated dental disease and abnormalities of a significantly large segment of the total population”.

In Canada approximately a third of the population visits a dentist during a year. In the United States this fraction is today approximately two-fifths.

For every 100,000 persons in the United States, there are today 56 dentists, but in Canada only 33. Canada (population 18,000,000) has today 914 undergraduate dental students.) The United States (population 180,000,000) has approximately 13,600 students enrolled in dental schools. However, the Commission predicts that to maintain the present-day ratio of dentists to population in the United States, a 75 per cent increase in the capacity of the American dental schools must be achieved by 1970. In Canada it has been calculated that to achieve a ratio of dentists to population of 1:2,500 (1960; Canada — 1:3,018; U. S.—1:1,697) “probably two or three moderate-sized schools will have to be built and register their first classes by 1964. Planning for these schools should be under way now” (Ellis, 1961).

Under the heading “Reducing Dental Need” the Commission reports “The only preventive procedure which has shown significant effectiveness in large population groups is water fluoridation”. As yet only approximately 20 per cent of the population of the United States has fluoridated water supplies. In Canada at this time only approximately 7.4 per cent of the population is so benefiting.

Increased productivity within the average dental practice is being attained in the United States and in Canada. Factors are the introduction of high-speed equipment, increased numbers of operating rooms, greater use of auxiliary personnel, improved practice administration and group practice. In Canada in 1961, to serve with 5,865 dentists, there are 74 dental hygienists registered to practise and a further eight have graduated this year from the one Canadian university as yet having dental hygiene students completing their training.

Furthermore, the Commission reports: “The full contribution of auxiliary personnel to dental practice will not be realized merely by increasing their numbers. A careful re-examination of the functions of the hygienist and the assistant is in order. However reluctant to do so, the profession should analyze the dentists’ treatment procedures and determine those that can be delegated to lesser trained personnel”. In this area the Canadian Dental Association has already demonstrated leadership by the adoption at the 1960 meeting of the Board of Governors

of the policy statement entitled “Projection of Dental Services in Canada”.

The Commission summarizes the section of the report entitled “Dental Health” in the following terms:

“Every possible approach — expanding dental schools, increasing training facilities for dental hygienists and assistants, development of new methods of using auxiliary personnel, and the widespread application of preventive procedures — must be pursued with vigour if adequate dental service is to be available.”

Every possible approach must also be vigorously pursued in Canada.

The Commission arrived at thirteen sets of specific recommendations under the heading “Dental Health”. These recommendations are listed below, each followed by the comments of the Council on Public Health of the Canadian Dental Association.

1. Recommendation

“That the dental profession take the necessary steps to organize a national voluntary council on dental health. This citizens’ organization should be responsible for stimulating interest in the dental health problem and for developing support for programs of dental care, research, prevention, and education.”¹

Comment.—Whilst agreeing in principle with this recommendation, the Council is not convinced that in Canada the time is as yet opportune to press for the inauguration of such a council. Cognizance is taken of the activities in this general area currently being undertaken by many organizations, such as the Health League of Canada, the Ligue d’Hygiène Dentaire de la province de Québec, and the boards of health of many Canadian cities, municipalities, and rural areas. However, there is in Canada at this time a very rapid awakening as to the extent of the dental health problem and it is suggested that this recommendation may perhaps be suitable for implementation in the not too distant future.

2. Recommendation

(a) “That all public agencies, with the assistance of voluntary associations and professional societies, make greater efforts to promote water fluoridation and community topical fluoride programs.

(b) “That a special federal grant-in-aid be made to states to assist communities in meeting the cost of initiating fluoridation programs, on a matching basis. The funds

should be specifically earmarked for this purpose and should be granted on the basis of need. Priority should be given to smaller communities.

(c) "That state dental practice acts be modified to allow both dental hygienists and dental assistants to apply fluorides under the supervision of a dentist."²

Comment.—The Council strongly endorses the recommendations of the Commission relating to water fluoridation.

However, it is considered that at this time topical fluorides should be utilized as part of routine dental care, especially for children, and that only under exceptional circumstances would a separate demonstration program appear to be desirable.

In Canada such topical applications are within the normal duties of dental hygienists and there is little doubt that the possibility of other dental auxiliary personnel being trained and licensed to include this preventive measure within their area of activity, will evolve in the years ahead.

3. Recommendation

(a) "That the American Dental Association expand the activities of its Bureau of Dental Health Education; the U.S. Public Health Service increase its dental health education activities directly and through provision of assistance to states; and state and local public health agencies and dental societies initiate or expand public health education programs.

(b) "That the number of trained health educators employed by official health agencies and dental societies be markedly increased, and that the educational efforts be guided by their recommendations."³

Comment.—In Canada, at the national level, the above recommendation may be considered appropriate to the Bureau of Public Information of the Canadian Dental Association and the Department of National Health and Welfare.

The Council on Public Health plans, in the years ahead, to provide greater assistance than perhaps available heretofore in the area of dental health educational aids to provincial and local public health agencies and to dental societies across Canada.

In the opinion of the Council on Public Health, consideration should be given to the appointment of a trained health educator within the Bureau of Public Information of the Canadian Dental Association.

4. Recommendation

"That dental public health agencies, in co-operation with dental societies, dental schools, and schools of public health, expand their efforts in areas of continuing and professional education for all health and health-related disciplines."⁴

Comment.—This topic was discussed at the January 1961 meeting of the Council on Public Health of the Canadian Dental Association. It was decided that, before approaching other health and health-related disciplines regarding the orientation of their students in dental public health, it should be first ascertained that this was adequate at this time for undergraduate dental students. Therefore, with the approval of the Council on Education, a survey will shortly be carried out to ascertain the present status of dental public health training at the undergraduate level in the dental schools of Canada. Future recommendations will be based on the results of this survey. Subsequently the Council on Public Health will explore the instruction in dental public health being provided at Canadian schools of public health and within the professional education of other health disciplines.

5. Recommendation

(a) "That official health agencies assert their proper leadership in the initiation, planning, and administration of dental care programs, giving first priority to school-age children.

(b) "That existing crippled children's service programs be expanded as rapidly as possible to include comprehensive care for children with oral clefts and other severe dentofacial deformities requiring orthodontic treatment."⁵

Comment. — Regarding the first of these recommendations the Council is of the opinion that, in Canada, wherever possible, such programs should be initiated, not at the commencement of school, but at the three-year age level. If circumstances prescribe the initiation in the first instance of programs commencing at school-age then, at the very earliest opportunity such programs should be expanded to include preschool children. However, ideally, first priority should be given to the initiation of dental care programs for three-year old children, and subsequently for school pupils.

There is a need at this time in Canada for a survey of programs and services available for children suffering from oral clefts or

other severe dentofacial deformities. The Council on Public Health, in conjunction with the Committee on Hospital Services, is currently arranging a survey of dental services available in hospitals and other institutions across Canada, which will provide some information in this regard. Epidemiological studies are also being carried out in Canada in an endeavour to measure the prevalence of the most severe dentofacial deformities requiring orthodontic treatment.

6. Recommendation

(a) "That dental public health agencies place greater emphasis upon research and investigation, particularly in areas such as social and behavioural studies, epidemiological investigation, development of more effective administrative procedures, and the evaluation of health education methods; and that the U. S. Public Health Service encourage these types of investigations.

(b) "That training courses and workshops in research methods be established, and such education be offered to dental public health personnel by the U. S. Public Health Service and by the schools of public health."⁶

Comment.—It is recommended that the above activities suggested as appropriate for the United States Public Health Service be undertaken in Canada at an early date by the Department of National Health and Welfare. In addition it is hoped that the above areas of research and investigation will be increased in Canada by provincial and local dental public health agencies, particularly in areas such as social and behavioural studies and the evaluation of health education methods. Financial support for such studies is already available through the Canadian National Health Grants Program.

7. Recommendation

"That the U. S. Public Health Service and state and local dental health agencies expand demonstration projects and experimentation in special problem areas such as radiation protection, rehabilitation of the handicapped, and the provision of dental care for the home-bound, aged, and chronically ill."⁷

Comment.—It is desirable that the Dental Health Division of the Department of National Health and Welfare be strengthened to carry out such assignments and that simi-

lar projects also be undertaken in Canada at the provincial and local levels.

8. Recommendation

(a) "That the federal public health traineeship program and the dental officer career development program of the U. S. Public Health Service be expanded.

(b) "That recruitment activities for all types of dental personnel be greatly expanded, and better methods be developed to present the potentialities of a career in public health to dental and dental hygiene students.

(c) "That dental public health programs make greater use of adjunct personnel including dental hygienists, health educators, statisticians, engineers, social scientists, and administrative and dental assistants; and that experimentation be initiated to discover more effective ways of utilizing adjunct personnel."⁸

Comment.—The U. S. federal public health traineeship program and the dental officer career development program of the U. S. Public Health Service are unfortunately not widely applicable to Canada at this time. This is due to the fact that in Canada, in most instances, both at the national and provincial levels of government, dental services are provided within the programs of many and various departments, each separately administered. Nevertheless the need for dentists of high competence in public service in Canada is rapidly increasing.

The utilization of dental hygienists in Canada in dental public health programs is most severely handicapped by the previous lack of training facilities for such personnel in all but one of the dental schools of Canada. However, at the University of Toronto there are now facilities for graduating 50 dental hygienists each year, and in the fall of 1961 training became available at the University of Alberta for 20 dental hygiene students, and at Dalhousie University for 8 students.

9. Recommendation

"That health agencies establish dental salary schedules comparable to incomes in private practice in order to attract and hold competent individuals."⁹

Comment.—The Canadian Dental Association "firmly believes that in order to attract a suitably qualified dentist to a position of

salaried employment, remuneration should be based on: (1) the responsibility attached to the position, (2) the qualifications and length of training required for this position, and (3) a reasonable relationship with the attractions of other areas of dental practice." Also there has been prepared by the Council on Public Health and is now available from the headquarters of the Canadian Dental Association a statement entitled "Terms of Employment for Salaried Dentists". Therein is recommended — "The applicant should assure himself that the salary offered is commensurate with salaries paid by other agencies for comparable duties and also be informed as to the anticipated income of private practice by his age group in the locale of his appointment."

The Council on Public Health is in entire agreement with this recommendation of the Commission regarding dental salaries and will be giving this subject further study.

10. Recommendation

(a) "That every effort be exerted by the dental profession, in co-operation with other groups, to secure more adequate financing for dental health programs at the local, state, and national level.

(b) "That official health agencies make more aggressive efforts to obtain funds for dental health programs.

(c) "That a federal grant-in-aid to the states be established, specifically earmarked for dental public health programs."¹⁰

Comment.—The Council on Public Health endorses the first two of the above recommendations. However, a federal grant specifically earmarked for dental public health programs is not acceptable at this time within the terms of the Canadian National Health Grant program. Nevertheless, this topic will receive further consideration.

11. Recommendation

(a) "That states and local communities design and initiate incremental care programs for children, covering six-year olds the first year and adding new groups of six-year olds each year until all children through high school are covered.

1. The cost of such care to be met by the family if family income is sufficient.

2. All children from indigent families to receive care at community or state ex-

pense, with assistance by financial grants from the federal government.

3. Programs to be developed under which communities of states would provide partial payment for dental care, also with federal assistance, for children of low-income families who are not indigent.

(b) "That all parents provide dental care for their children or utilize the services or public programs until the children are able to assume the responsibility for their own care.

(c) "That programs be established to provide care, under a system of priorities, to adults who are unable to provide for themselves, giving first priority to the relief of pain and infection and to those who may be made employable through the provision of dental services."¹¹

Comment.—As noted previously, it is recommended by the Council on Public Health that all incremental care programs for children in Canada commence at three years rather than at six years of age.

The Canadian Dental Association is in accord with the early establishment of dental care programs for children and in many provinces programs are already in operation providing dental care for children of indigent families. Programs for children of low-income families who are not indigent and who themselves would provide partial payment for dental care are an interesting possibility yet to be explored.

The Council is in entire accord with recommendation (b) for child dental care.

Programs of emergency dental care for adults, at least at the lowest order of priority, are available for indigents in most provinces of Canada.

12. Recommendation

(a) "That experimentation in methods of providing and paying for dental care through organized group action be increased; that foundations, labour unions, corporations, and governmental agencies provide funds to support such experimentation.

(b) "That dental service corporations be organized by all state dental societies to facilitate the development of plans for the group purchase of care."¹²

Comment.—The Canadian Dental Association

has already expressed itself as being in favour of the above recommendations.

13. Recommendation

(a) "That the scope of training in schools of public health be broadened to provide instruction in administrative methods which would be useful in education, research, and dental care management, as well as in the traditional public health programs.

(b) "That the profession give greater recognition to the importance of developing administrative skills; encourage formal training for those who may become engaged in administrative dentistry; and encourage outstanding dental students and dentists to enter the field."¹³

Comment.—The Council on Public Health of the Canadian Dental Association strongly endorses the above recommendations of the Commission. However, there probably also exists a need for the establishment of additional specialized training courses for such personnel.

The need for highly competent dental administrators with adequate experience and training is already present in Canada today and will rapidly increase in the years ahead.

CONCLUSIONS

The Council on Public Health of the Canadian Dental Association considers the Dental

Health section of the Report of the Commission on the Survey of Dentistry in the United States to be of paramount importance in the development of the practice of dentistry.

Many topics within this report have already been examined by the Council and appropriate action has been taken.

In the years ahead the Council proposes to explore and appropriately inaugurate in Canada activities in other areas. This will require the active co-operation and assistance of many others in addition to the members of the Council.

The implementation of the recommendations of the Council, however, calls for the co-operation of the profession at large. This it is hoped will be achieved in the interests of the dental health of the people of Canada and the future of the Canadian dental profession.

REFERENCES

1. Survey of Dentistry, Final Report. Commission on the Survey of Dentistry in the United States. Washington, American Council on Education, 1961. p. 12.
2. Ibid. p. 42.
3. Ibid. p. 45.
4. Ibid. p. 46.
5. Ibid. p. 50.
6. Ibid. p. 53.
7. Ibid. p. 54.
8. Ibid. p. 56.
9. Ibid. p. 57.
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11. Ibid. p. 65.
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Federal Income Tax Returns by Members of the Dental Profession

The Secretariat, Canadian Dental Association

For guidance to the dental profession and to bring about a greater uniformity in the data to be furnished to the Taxation Division

of the Department of National Revenue in the annual Income Tax Returns to be filed, the following matters are set out.

INCOME

1. There should be maintained by every member of the dental profession an accurate record of income received, both as fees from his profession and by way of investment income. The record should be clear and capable of being readily checked against the return filed. Records should be maintained in books kept for the purpose which should be retained until written permission for their disposal is obtained from the Minister of National Revenue.

EXPENSES

2. Under the heading of expenses the following accounts should be maintained and records kept available for checking purposes in support of charges made:

(a) Dental and like supplies.

(b) Office help, nurse, bookkeeper, laundry and malpractice insurance premiums. Amounts of salaries and wages paid should be reported on Form T4, obtainable from your District Income Tax Office. (The Income Tax Act does not allow as a deduction a salary paid by a husband to a wife or vice versa. Such amount, if paid, is to be added back to income of the payer.)

(c) Telephone expenses incurred in connection with professional practice.

(d) Assistant's fees:

The names and addresses of the assistants to whom fees are paid, and amounts paid, should be furnished on or before the last day of February in each year on Form T4. (Do not confuse with individual return of income, Form T1, to be filed on or before 30th April in each year.)

(e) Rentals paid:

The name and address of the owner (preferably) or agent of the rented premises should be furnished. [See (g).]

(f) Postage and stationery.

(g) Proportional expenses of dentists practising from their residences:

(a) Owned by the dentist:

Where a dentist practises from a house he owns and as well resides in, a proportionate allowance of house

expenses will be given for the laboratory, office and waiting room space, on the basis that this space bears to the total space of the residence. The charges cover taxes, light, heat, insurance, repairs, and interest on mortgage. (Name and address of mortgagee to be stated.) Note: For depreciation see item 2 (m).

(b) Rented by the dentist:

The rent will be apportioned and heat and light if paid by the dentist; the owner of the premises takes care of all other expenses mentioned in (a) above.

(h) Sundry expenses (not otherwise classified):

The expenses charged to this account should be capable of analysis and supported by records.

Claims for charitable donations will be allowed up to 10 per cent of net income from all sources upon submission of receipts to your District Income Tax Office. Charitable donations made through professional practice should be excluded from professional expenses and claimed as a deduction from income generally, along with any donations made otherwise.

The annual dues paid to governing bodies under which authority to practise is issued and membership association fees, to be recorded on the return, will be admitted as a charge.

The cost of attending postgraduate courses will not be allowed.

(i) Interest paid on borrowed money may be charged against professional income if the borrowing was for professional purposes. If the money was borrowed to acquire investments, the interest is chargeable against the investment income. If the loan was for personal purposes no deduction from income will be allowed for the interest paid thereon.

(j) Business tax should be allowed as an expense but income taxes will not be allowed.

(k) Automobile expenses:

Taxi fares and automobile expenses incurred in earning the income from the dental practice will be allowed when the dentist must visit the pa-

tients at their homes. The cost of transportation between the dentist's home and his office, however, is not an allowable deduction from income.

- (l) Social club dues are allowable as deductions from income only when, and to the extent that, they are paid for business purposes, and any dentist claiming them may be required to prove, to the satisfaction of the taxation authorities, that the amount claimed was expended wholly and directly for the purpose of increasing his business income. "Social club dues" means annual or monthly membership dues or fees; it does not include an initiation or entrance fee or the cost of a share of a club's capital stock, nor does it include charges for food and drink, living accommodation, fees for the introduction of guests and the like.

- (m) Capital Cost Allowance (Depreciation):

The method of computing capital cost allowance for tax purposes is the same as that used last year and you should have no difficulty if you have a copy of last year's return available.

A description of the treatment of capital cost allowance may be found on page four of the Income Tax Return form T1 General under the Part XI Method and in the T1 General Information Sheet.

Simply carry forward the balance remaining in each class after deducting last year's allowance. Add to this

figure the cost of any new equipment purchased and deduct the proceeds from any disposal of property in each class. The rate you wish to use, not exceeding the maximum rate (see tables), is applied to this new balance for each class to obtain the capital cost allowance you may claim this year.

The schedule on page four of the Income Tax Return is reproduced at the foot of this page.

The maximum rates for the classes of equipment most used by dentists follow:

Assets	Class	Maximum rate
Dental equipment including instruments each costing \$100.00 or more	8	20%
Instruments costing less than \$100.00	12	100%
Office furniture and fixtures	8	20%
Frame building (office or residence used both as dwelling and office)	6	10%
Brick building (office or residence used both as dwelling and office)	3	5%

Instruments costing less than \$100 each belong in class 12 and have a maximum allowance rate of 100 per cent. They should not be included in expenses but should be recorded as additions in column 3 of the schedule.

SCHEDULE

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Class number	Undepreciated capital cost at beginning of 1961 (Col. 8 of 1960 return)	Cost of additions during 1961	Proceeds from disposals during 1961	Undepreciated capital cost before 1961 allowance (Col. 2 plus 3, less 4)	Rate %	Capital cost allowance for 1961	Undepreciated capital cost at end of 1961 (Col. 5 less Col. 7)

Where a dentist practises from a house which he owns and resides in, the allowance may be claimed as above on a portion of the cost of the residence, excluding land. For example if the residence were a brick building costing \$12,000 and one-third of the space were used for the office, the dentist would use \$4,000 as the business portion of the cost and apply the building rate of 5 per cent to determine the maximum depreciation allowable in the first year.

For further information on the subject you may refer to the Regulations or you may consult your District Income Tax Office.

CONVENTION EXPENSES

Convention expenses are allowable to an individual practising a profession, but the allowance is restricted to the expense of attending no more than two conventions in a taxation year. The taxpayer's attendance at the convention must have been for professional reasons. There are no geographical restrictions and the convention, therefore, need not necessarily have been held in Canada. The expenses to be allowed must be reasonable and the taxpayer should show:

1. The dates on or between which the convention was held, and the location thereof;
2. The number of days he was present at the convention, supported by a certificate of attendance from the sponsoring organization; and
3. The expenses incurred, segregating
 - (a) Transportation expenses
 - (b) Meals, and
 - (c) Hotel expenses, for which at least vouchers should be obtained and kept available for inspection.

All expenses of a personal nature including those attributable to the fact that the taxpayer's wife (or husband) accompanied him to the convention must be excluded from the foregoing.

No expenses for attending a convention are allowable as a deduction from salary income, since such a deduction is prohibited by Section 5 of the Act.

REGISTERED RETIREMENT SAVINGS PLANS

The amount that is deductible in respect of contributions to a retirement savings plan is limited:

- (a) In the case of an employee receiving a salary who is covered by a registered

pension fund or plan (whether or not he contributes to the pension fund) to \$1,500 or 10 per cent of his earned income, minus the amount, if any, he is allowed to deduct from income for his contribution to the pension fund.

- (b) In other cases, to the lesser of \$2,500 or 10 per cent of his earned income. "Earned income" usually consists of income received as salary (before any pension deductions) or income from carrying on a business or profession, plus net rental income.

The amounts deductible are those paid in 1961 and within 60 days after the end of the year. A payment made in January or February 1961 cannot be claimed in 1961 if it could have been deducted in 1960.

Individuals enquiring whether a proposed or existing plan is acceptable should usually obtain that information from the corporation offering the plan as it will normally be the corporation's responsibility to explain the plan and get it registered.

Dentists who have applied for membership in the Canadian Dental Association Retirement Savings Plan prior to February 15, 1962, may be assured that their names are registered as participants in a registered retirement savings plan and that their contributions are deductible for the taxation year 1961. The closing date for applications and contributions applicable to 1961 is February 15, 1962.

A personal statement of account and a receipt showing the amount of contributions will be mailed in March 1962 to each participant to support claims made for deductions in 1961 income tax returns.

Applications for membership in CDARSP received after February 15, 1962, will entitle participants to tax deferment for 1962.

PAYMENT OF TAX

3. Payment of Tax. Individuals whose income is more than 25 per cent derived from sources other than salary or wages are required to pay the tax for each year by quarterly instalments during such year on the following dates, 31st March, 30th June, 20th September and 31st December.

DENTISTS UNDER SALARY CONTRACT

4. The Income Tax Act provides for the deduction of certain expenses from salary income.

The allowable expenses include travelling expenses, annual professional membership

dues, office rent, salary to an assistant or substitute and supplies consumed directly in the performance of the duties of employment.

Certain conditions are attached to the allowance of the expenses. Without trying to recite the exact provisions of the law the main points are:

- (a) That the expenses must have been incurred in the performance of the duties of the office for employment.
- (b) That the employee is required under the contract of employment to pay the expenses.
- (c) To claim travelling expenses the employee must be ordinarily required to

carry on the duties of his employment away from his employer's place of business. Travelling between the dentist's home and his office is not included.

INCOME FROM A PARTNERSHIP

5. Additional expenses incurred by a partner, but not charged to the partnership, may be claimed as a deduction from the partner's share of income. However, the partner must be in a position to substantiate these expenses, to show why they were not charged to the partnership and that they were necessarily laid out to earn partnership income.

DENTISTRY IN THE NEWS

The Association

COUNCIL ON PUBLIC HEALTH TO MEET

The Council on Public Health will hold its annual meeting at Association headquarters, January 25-26, 1962. Chairman of the Council is F. McCombie of Victoria, British Columbia. Other members are B. J. O'Meara of Charlottetown, Prince Edward Island, C. A. E. McCabe of Montreal, Marjorie Jackson of Toronto, and A. R. S. Grey of Lethbridge, Alberta. Several dental directors from provincial and federal health departments, several chairmen of provincial dental public health committees, and others concerned with dental public health are expected to attend the two-day meeting.

Canada and the Provinces

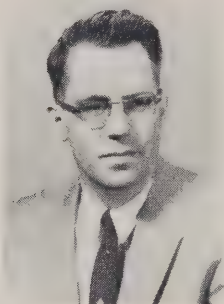
PROMINENT CANADIAN DENTIST APPOINTED UNIVERSITY OF BRITISH COLUMBIA PRESIDENT

John B. Macdonald, director of the Forsyth Dental Infirmary and professor of Microbiology at Harvard University School of Dental Medicine in Boston, has been named president of the University of British Columbia. Dr. Macdonald is the first dentist ever to be appointed a university president. He will leave his present position to take over as University of British Columbia next July 1.

A 1942 Toronto graduate, Dr. Macdonald received his Master of Science degree from the University of Illinois in 1948, and Doctorate of Philosophy from Columbia University in 1953.

In 1955-56 Dr. Macdonald undertook a study, published under the title *A Prospectus on Dental Education*, for the University of British Columbia. Last summer he returned to Vancouver to prepare an up-dated revision of that report. As noted in the December 1961 issue of the *Journal of the Canadian Dental Association*, the report recommends establishment of training facilities for dentists and dental hygienists at the University of British Columbia.

J. B. Macdonald



As assistant and later associate professor of Bacteriology in the Faculty of Dentistry, University of Toronto between 1949-56, Dr. Macdonald was largely instrumental in establishing the Division of Dental Research at Toronto's dental school, serving as chairman of the Division until 1956. His own research work has dealt primarily with infections of the oral mucosa and their relation to periodontal diseases.

The first studentship ever awarded by the Canadian Dental Association went to Dr. Macdonald. Since that time these grants have assisted twenty-three other dentists to pursue graduate studies. Following his earlier return from the United States, Dr. Macdonald served between 1953-56 as a member and later as chairman of the Canadian Dental Association's Council on Research. In 1952 he was also chairman of the joint committee on fluoridation of the Canadian Medical and Dental Associations. He has also served as chairman of the Associate Committee on Dental Research of the National Research Council.

TAX CRACKDOWN EXPECTED

The *Financial Post* reports that a real crackdown on tax evaders will hit Canadians soon. Tax assessors and investigators have

reportedly stepped up their crosscheck work based on 1960 (and earlier) returns. The *Financial Post* believes that professional people, including dentists, are in for tougher search and questioning in the months ahead.

Dentists and other independent professional people are natural targets for income tax investigators because of cash dealings and special expense allowances not permitted salaried employees.

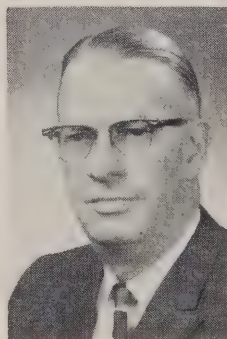
FELLOWSHIP IN THE AMERICAN COLLEGE OF DENTISTS CONFERRED ON TWO CANADIANS

Two prominent Canadian dentists, L. E. Francis of Montreal and A. H. Leckie of Hamilton, were the recipients of fellowships conferred at a convocation of the American College of Dentists held at Philadelphia, October 15, 1961.

Dr. Francis, a staff member of the Faculty of Dentistry, McGill University, is assistant-professor of Clinical Dentistry.

Dr. Leckie is president of the board of directors of the Royal College of Dental Surgeons of Ontario.

ALBERTA



G. E. Decker

New Registrar-Secretary-Treasurer Appointed. — G. E. Decker of Edmonton has been appointed registrar-secretary-treasurer of the Alberta Dental Association. He succeeds the late R. A. Rooney. Dr. Decker served as assistant secretary for some months prior to Dr. Rooney's death.

Dr. Decker was born at Balcarres, Saskatchewan, April 4, 1909. There he received his elementary school education and all but one year of secondary school education. Dr. Decker received his dental training at the Faculty of Dentistry, University of Alberta where he graduated in 1932. Subsequently he interned for two years at the University Hospital, Edmonton. Dr. Decker practised at Lacombe and Lloydminster before moving to Edmonton in 1938. He joined the Canadian Army in 1941 and returned to practise in Edmonton upon discharge. Dr. Decker retained his military affiliation with the Reserve Army and retired as Lieutenant-Colonel in 1957. Since the war he has also been a staff member of the Faculty of Dentistry, University of Alberta. He is a past president of the Edmonton and District Dental Society. Dr. Decker was married in 1939 and has two children.

BRITISH COLUMBIA

Dentists' Wives Establish Bursaries. — Two dental bursaries of \$200 each have been established at the University of British Columbia by the British Columbia Dentists' Wives Association. These bursaries are financed by a province-wide collection of amalgam scrap. A blitz drive on Greater Vancouver dental offices made it possible to establish the bursaries last fall, but in future a systematic collection will be made from dentists who have promised their support.

Victoria and District Dental Society. — A large number of members were present to hear a report on the national medical care scheme in Australia by Peter Banks, M.D., chief of medicine at St. Joseph's Hospital, Victoria. The speaker recently visited Australia for a period of five weeks to garner information about the effectiveness of the Commonwealth's medical care plan.

Fall Convention in the Interior. — The clinical and aesthetic selection of artificial teeth was the subject of an illustrated talk given by Mr. C. Watters at the fall meeting of the Interior Dental Society held in Penticton on October 27, 1961.

The afternoon was devoted to a demonstration of a root canal obliteration and apicoectomy given by Clifford Ames of Vancouver.

The following were elected as officers for the ensuing year: president, R. B. Emslie, Kelowna; vice-president, A. E. Wells, Penticton; secretary, M. J. R. Leitch, Kelowna; directors, Y. Iwasaki of Kamloops and G. K. Wyne of Enderby.

Vancouver and District Dental Society. — A clinical and consulting psychologist from Sherman Oaks, California, Russel Haney, Ph.D., addressed the November meeting of the society on "Communication in Dental Practice". The afternoon and evening lectures dealt with human behaviour and its relation to dental practice.

MANITOBA

Manitoba Dental Association. — A revised group disability insurance plan has been negotiated for the benefit of association members. The plan is comprised of two parts as follows:

1. Basic Plan. — This provides benefit payments of \$125 per week with two-year coverage for sickness and five-year coverage for accidents. Benefit payments commence on the first day in the case of accident and the thirty-first day in the case of sickness.

2. Optional Extension Provision. — This provision has the same benefits as the basic plan but extends the duration of benefit payments to life for accidents and to age 65 for sickness.

Uninsured members of the Manitoba Dental Association are eligible for participation in the basic plan without producing evidence of insurability, while members previously insured under the former plan may transfer without producing evidence of insurability. If the optional extension provision is chosen, it will be issued subject to medical evidence, and a medical examination may be required.

Response to the revised plan has been excellent, and over 80 per cent of Manitoba's eligible dentists have applied for coverage.

Winnipeg Dental Society. — A physician and a dentist addressed the November 1961 meeting of the society.

H. W. Hart, professor and head of the Department of Prosthodontology, Faculty of Dentistry, University of Manitoba discussed the basic principles of denture construction in a thought-provoking address entitled "Is it not a Matter of Principle?". Dr. Hart stressed the importance of adequate preparation before commencing the construction of dentures. Particular emphasis was directed to examination, diagnosis and treatment planning, and the establishment of proper vertical dimension and jaw relationship to give a functionally and aesthetically satisfactory restoration.

A. Zipursky, medical director of the Blood Transfusion Service, Manitoba Division of the

Canadian Red Cross Society, lecturer in the Department of Paediatrics, Faculty of Medicine, University of Manitoba, and haematologist at the Winnipeg Children's Hospital gave an illustrated lecture on "Haematological Disorders in Dental Practice". Dr. Zipursky differentiated between haemostasis and coagulation, describing the mechanisms involved in blood disorders. Particular reference was made to the recognition of patients with haematological disorders in the dental office.

NEWFOUNDLAND

Newfoundland Dental Society. — In a brief submitted to the Royal Commission on Health Services at the beginning of November 1961, the society recommended a well organized, properly developed, and efficiently administered master plan to provide the best possible dental service for the people of Newfoundland. The brief recommended:

1. The establishment of three regional dental health units in eastern, central and western Newfoundland.

2. That each regional dental health unit be under the direction of a dentist properly qualified in dental public health, with the status of regional dental health consultant.

3. That a comprehensive dental survey be undertaken in each region to establish a dental caries index, the incidence of malocclusion and periodontal diseases for children in each region.

4. That preventative dental care programs be developed on the basis of this survey, and be directed by the regional dental consultant.

The society urged the government of Newfoundland to make fluoridation of all water supplies mandatory in towns and municipalities having public water systems.

It was further recommended that widespread educational efforts be undertaken to acquaint parents and children with the importance of dental health and the means of attaining it.

The brief said that recruitment of Newfoundlanders to the dental profession could be encouraged through the establishment of a scholarship fund which would make available annually large scholarships for candidates with high academic standards. The brief also stressed the great need for the establishment of a student loan fund from which long-term, non-interest bearing loans might be made available to students who might prefer to finance their own education, thereby remaining free to accept competitive opportunities.

There are 44 dentists in Newfoundland

where the dentist to population ratio is 1:10,929. The Canadian average is 1 dentist to 3,037 population.

NOVA SCOTIA

C.D.A. President and Secretary Visit Nova Scotia. — "It is only a matter of time before Canada follows the pattern of European countries and institutes some form of socialized medicine", William Miller, president of the Canadian Dental Association, told a combined meeting of the Nova Scotia Dental Association and the Halifax County Dental Society on November 30, 1961.

"It would seem to be the part of wisdom to become thoroughly conversant with European systems," Dr. Miller said, "and profit from their mistakes in order to institute the best possible system."

He warned that certain basic problems inevitably accompanied the introduction of a socialized health scheme. These problems were: (1) ensuring an adequate supply of trained personnel; (2) maintaining an efficient administration; and (3) maintaining a high quality of service. These three problems should be recognized by legislatures as well as by the dental profession, he added.

Dr. Miller warned that use of dental auxiliaries could easily lead to lowering of the standard of dental care by partially trained personnel unless an effective system of control was instituted. Auxiliaries, he said, should be trained in dental schools.

In countries with socialized medicine, there existed a tendency to vest administration in the hands of laymen. "Well intentioned though they may be, they have little knowledge of the responsibility which rests on the profession rendering health services," Dr. Miller stated. "Too often the result is the development of an expensive bureaucracy with little appreciation of the basic problem. For this reason, administration must remain essentially in the hands of the profession."

In the near future, the dental profession must be prepared not only to serve the public in its chosen field, but also to co-operate with government in devising a satisfactory system of extending dental care to more people at a cost which will be satisfactory both to those who receive and those who render services.

Don W. Gullett, Association secretary, also addressed the meeting. In Canada, he revealed, there was one dentist for every 3,037 persons while in Sweden the ratio was 1,350 to 1. He warned that the Royal Commission investigating health in Canada would make

startling recommendations. "People are demanding increased health services and politicians have sensitive ears," he added. "It is preferable to establish health plans by mutual agreement between the government and dentists rather than resort to resistance."

Dr. Gullett also warned of the complex problems brought about by socialized medicine. These problems, he said, involved the free choice of practitioner; arranging for the practitioner to be paid in accordance with his ability; and the establishment of a health service where the patient's needs were the prime consideration.

Fourth-year dental students from Dalhousie University were present at the meeting which was one of several attended by the president and secretary of the Canadian Dental Association in the course of their annual visit to dental organizations in eastern Canada. T. L. Rogers, president of the Nova Scotia Dental Association, presided at the meeting.

ONTARIO

Royal College of Dental Surgeons of Ontario. — A meeting of the board of directors held in Toronto, November 20-22, 1961, gave consideration to and resulted in the indicated action on the following matters:

Creation of a three-man steering committee, under the chairmanship of E. R. W. Bilkey, to prepare a brief on behalf of the Ontario Dental Association and the Royal College of Dental Surgeons of Ontario for submission to the Royal Commission on Health Services when the Commission meets in Toronto in May, 1962.

Approval for participation in the Mediscope exposition to be held at the Canadian National Exhibition in 1962. A budgetary allocation of \$2,500 was earmarked for this purpose.

On November 17, 1961 some 1,588 dentists in Ontario, Alberta, Saskatchewan and Manitoba were participating in the comprehensive group liability insurance program. Of this number 1,231 were participating in Ontario. This represents a total premium of \$55,107.60.

Under the new all-risk office contents insurance plan some 205 policies had been issued up to November 17, 1961. This represents a premium contribution of \$12,124.88 which provides a coverage of \$1,989,813.00.

There was an expression of concern over the number of individual insurance programs existing throughout the province. An effort will be made to attempt greater co-ordination of these various plans.

Increased utilization of the Dental Welfare Plan by eligible beneficiaries was reported with average monthly receipts of \$14,966.00 and average monthly expenditures of \$13,658.00 being recorded. The balance of \$1,308.00 was considered reasonably satisfactory to cover the cost of services not yet reported. The average number of eligible children has risen to 22,374. The board authorized that further attempts be made to extend the plan to other beneficiary groups of the provincial Department of Public Welfare.

The board approved a policy which will, in the absence of any arrangement permitting the acquisition of the certificate of the National Dental Examining Board of Canada by all graduates of approved Canadian dental schools without the present necessity of qualifying through two separate examinations, make possible the acceptance for licensure of graduates of the approved Canadian dental schools without further examination effective November, 1962.

Authorization was granted to initiate negotiations with the Workmen's Compensation Board of Ontario with respect to revision of the schedule of dental fees.

A liaison committee has been established with the Ontario Dental Association to facilitate more effective communication between the College and the Association. E. A. White, F. H. Shepherd, M. G. Boyes, W. W. Philp and G. K. Chapman have been appointed to this committee by the Ontario Dental Association. A. H. Leckie, J. D. Purves, and W. J. Dunn are the representatives of the College.

Authority was granted to request the Minister of Education to have all commercially sponsored schools for dental assistants operate within the provisions of the Trade Schools Regulations Act.

O. J. Yule of Toronto was re-appointed to represent Ontario on the Board of Governors of the Canadian Dental Association for the year 1962.

London and District Dental Society. — The second stated meeting of the current season was held on November 11, 1961 at the Hotel London in London, Ontario. P. E. Currie, president of the society, presided at the meeting which was attended by seventy dentists from London and the surrounding area. R. W. Phillips, professor of Dentistry, Indiana University School of Dentistry, was the guest lecturer. Choosing as his subject "Limitations and Advantages of Contemporary Dental Materials", Dr. Phillips discussed the practical application of the results of recent research into dental materials, as well as the factors which influence their success or failure from a clinical and biological standpoint.

QUEBEC

Montreal Fall Clinic. — The thirty-sixth Annual Fall Clinic of the Montreal Dental Club was held at the Queen Elizabeth Hotel, October 23-25, 1961. Over three hundred registered dentists, as well as a large number of visitors and guests, combined to make this year's convention a great success.

Two limited attendance seminars were given on Sunday, October 22, the day preceding the actual convention. E. R. Ambrose, chairman of the Department of Operative Dentistry, McGill University, conducted an all-day course in operative dentistry. D. Kepron, formerly associated with the McGill University Prosthodontic Department, presented a course in mouth rehabilitation.

Following registration on Monday morning the following table clinics were presented: J. L. Bertrand, Mixed Dentition Analysis; R. W. Faith, Removable Appliances for Minor Tooth Movement; I. L. Feinchneder, Endodontics; D. C. Gordon, Pressure Amalgamation and Condensation Techniques; D. Kepron, Generated Occlusal Paths in Partial Denture Construction; L. Lewis, Gold-Based Mandibular Denture; B. L. Mendel, Rubber Base Impression Materials in Periodontal Prosthesis; J. J. McCarthy, Instrumentation in Exodontics; P. N. Neurotsos and D. Gilchrist, Cardiac Resuscitation Method; H. Ptack, Hinge Axis Face Bow; and H. Slater, General Anaesthesia in Dentistry. A number of additional table clinics were presented by senior students from the Faculty of Dentistry, McGill University. These included: Mrs. H. Herman and Mrs. P. Tucker, Subacute Bacterial Endocarditis; Mr. R. David and Mr. E. Androutsos, Porcelain Jacket Crown Preparation; Mr. W. Fraser and Mr. H. Nemetz, Pin Retention for Individual Restorations; Mr. O. Weaver and Mr. J. Abood, Pulp Capping and Pulpectomy Techniques; Mr. C. Casey and Mr. E. Fellows, Long or Short Cone Technique in Radiology; Mr. P. Jones, Local Anaesthesia; and Mr. T. Gosling, Cleft Palate Prosthesis in the Newborn.

The following essays and clinics were presented at the Convention: N. A. Shore of New York City, Occlusal Equilibration and Temporo - Mandibular Joint Dysfunction; H. J. Healey of Indiana University School of Dentistry, Development and Value of Present-Day Endodontics; A. Berliner of New York City, Biological Reconstruction — A primary Objective for the General Practitioner; C. H. Moses of Toronto, Complete Denture Procedure; Captain E. W. Spahn of the United States Navy, Practical Rehabilitation of a Seventy-Year-Old Male Patient; E. R. Ambrose of McGill University, Essentials of Conservative Amalgam Preparations and their Restoration with the Presto Alloy

Technique; Z. B. Nyeste of Montreal, Modern Concepts of Dental Practice; A. E. Kahn of the University of Pennsylvania, Dynamics of Occlusion; A. Gold, Endocrinology and Bone; A. Burgen, Salivary Glands; M. Simon, Inflammation; Joan DeVries, Recent Findings and Concepts of Mouth Bacteriology; and R. Wiener, Pathology.

Speakers at the scheduled luncheon included Ogden Glass, Principal and Vice-Chancellor of Bishop's University, who related some impressions of a recent visit to Russia; and Gerald Halpenny, president of the Canadian Medical Association, who reviewed the position of the medical profession in Canada in relation to current political trends.

The scientific motion picture program presented on Tuesday and Wednesday, October 24 and 25, proved to be a popular innovation.

Among the social highlights was a delightful cocktail party tendered on Monday evening, October 23, by the Montreal Dental Nurses' and Assistants' Association. The supper dance, which was held on Tuesday, October 24, proved to be another very popular event.

Those who arranged the scientific and social program are to be congratulated on the success of their efforts.

Mount Royal Dental Society. — The first general meeting of the current season was held at the Queen Elizabeth Hotel, Montreal, September 29, 1961. L. Talkov, professor and chairman of the Department of Prosthetic Dentistry, Boston University School of Medicine, was the guest clinician. Dr. Talkov delivered illustrated lectures on various aspects of restorative dentistry. Discussing amalgam restorations, he pointed out that small grain alloys produce the best restorations, the most important factor being the residual mercury content. Other important factors are the mercury-alloy ratio, trituration, condensation, and wedging of matrix bands.

Dr. Talkov cautioned against the use of calcium hydroxide as a pulp capping agent due to the risk of pulp abscess formation. He recommended the splint chrome technique for root canal obliteration and the use of a copper band compound impression technique for mutilated, endodontically treated teeth. The use of posts and cores, posts and crowns, and pins in the restoration of these mutilated teeth was described.

A modified three-quarter crown, having three pins and a connecting trough and making use of the Shooshan impression technique with small plastic pins in the preparation, was recommended for multiple splinting of periodontally involved mandibu-

lar incisors and for certain other anterior abutments.

Diagnosis and treatment planning in reconstruction were discussed in a further lecture. The patient's personality as a factor in treatment planning was especially stressed.

Discussing problems encountered in patients with periodontal disease, the speaker stressed the importance of the crown-root ratio. The prognosis depends on whether the direction of masticatory forces falls within the confines of the root. The speaker concluded by referring to the relationship between crown form and the gingiva and factors arising therefrom.

SASKATCHEWAN

Saskatchewan to Have Medical Insurance Plan. — The medical profession in Saskatchewan has reportedly found unacceptable the new Saskatchewan Medical Care Insurance Act, 1961. Under this act, every resident of the province, except dependants, is required to register himself and his dependants. Failure to register could result in a maximum fine of \$25.

The act provides "for payment for services rendered to certain persons by physicians and certain other persons". In addition to listed medical services insured services include dental anaesthesia in hospital and "dental anaesthesia in dental surgeries designated by the commission where rendered by a physician who is a specialist in anaesthetics". Also included are "dental services where provided by a dentist in conjunction with maxillo-facial surgery".

The act is to be administered by a commission consisting of not less than six and not more than eight members. One of the members will be the Deputy Minister of Health and at least two are to be physicians. Chairmanship may be a full-time position. There will also be an advisory council of not more than twenty-five members representing the health professions and other organizations. The advisory council is to report annually to the Minister of Health. Every five years it is to review and appraise the medical care insurance plan.

College of Dental Surgeons of Saskatchewan. — The recent election to the council of the College of Dental Surgeons of Saskatchewan resulted in the re-election of W. L. Clark of Conquest and F. S. W. Green of North Battleford. Newly elected to the council were R. E. Reid of Prince Albert and A. F. Muirhead of Moose Jaw.

A. F. Muirhead Named Associate Editor. — A. F. Muirhead of Moose Jaw, Saskatchewan, was recently named an associate provincial editor of the *Journal of the Canadian Dental Association* for Saskatchewan. He succeeded L. D. Haselton of Saskatoon.

Dr. Muirhead graduated from Washington University dental school, St. Louis, Missouri, in 1936. A native of Moose Jaw, he has practised in that city since 1949. Dr. Muirhead was recently elected to the council of the College of Dental Surgeons of Saskatchewan.



A. F. Muirhead

Moose Jaw Dental Society. — Mr. Hugh Thompson, local director of Civil Defence, addressed the society at a meeting held on November 29, 1961. He described Civil Defence training and the procedures to be followed in the event of a nuclear attack. Mr. Thompson, who is also a pharmacist, also described recent changes in legislation concerning the prescribing of "Controlled Drugs" and narcotics.

Paedodontic Refresher Course at Saskatoon. — C. R. Castaldi, professor of Paediatric Dentistry, University of Alberta, conducted a two-day paedodontic refresher course in Saskatoon on November 20-21, 1961. Dr. Castaldi was assisted by R. D. Haselton of Saskatoon. Part of the program was televised to the public living within range of the local television station.

The course covered the treatment of fractured anterior teeth using prefabricated stainless steel crowns, the restoration of badly mutilated teeth using stainless steel crowns, consideration of amalgam restorative materials, preparation of deciduous teeth for amalgam restorations and stainless steel crowns, radiographic technique for child patients and communal water fluoridation as a caries-preventive measure.

Consideration was also devoted to preventive orthodontics, space maintainers, serial extraction, pulp therapy, oral hygiene methods, therapeutic dentifrices and topical application of fluoride solutions.

About fifty dentists participated in the meetings which were held at the Saskatchewan Power Corporation building and in the studios of television station CFQC-TV.

Estevan Dentist Retires After 51 Years in Same Location.—A pioneer dentist of Estevan has recently retired after more than fifty years' continuous service to his community. F. R. Graham has decided to join the rest of his family, most of whom reside in Ontario. Dr. Graham will take up residence near Toronto but hopes to spend the summer months at his summer cottage at Carlyle Lake.

Born in New Brunswick in 1884, Dr. Graham graduated from the University of Maryland dental school in 1905. He registered in New Brunswick that same year and practised in Sussex. The following year he registered in the North-West Territories and practised for one year in Moose Jaw. He arrived in Estevan in 1907 to become that community's first resident dentist. He has made only one move since 1907, and then only across the street to the office which he recently closed.

Dr. Graham has taken an active part in the affairs of the College of Dental Surgeons of Saskatchewan, having served for a number of years on the examining board of the College. Two years ago he became an honorary member of the College.

It is the sincere hope of the College that Dr. and Mrs. Graham will enjoy many happy and rewarding years of retirement.

International Items

AUSTRIA

Austrian Dentists Hold Centennial Congress.—On the occasion of its one-hundredth anniversary, the Society of Austrian Dentists (*Verein Österreichischer Zahnärzte*) held a jubilee congress in Vienna, November 14-18, 1961. The Austrian society is the fourth oldest dental association in the world, only being

predated by the American, German and Swedish dental associations. The Society of Austrian Dentists has been a member of the *Fédération Dentaire Internationale* ever since the international group was founded in 1900. More than eighty scientific papers were delivered before the congress by prominent dentists from Austria and abroad.

FEDERATION DENTAIRE INTERNATIONALE

Early Enrolment Urged for F.D.I. Cologne Meeting.—Arrangements are rapidly being completed for a varied scientific and social program at the thirteenth international congress of the *Fédération Dentaire Internationale*. The congress, which is expected to attract a large number of Canadian dentists, will be held in Cologne, Germany, next July 7-14.

Five interesting scientific post-congress tours have been scheduled with visits to university dental schools and hospitals at Bonn, Freiburg, Erlangen, Hamburg, Berlin, Münster, Munich, the West German Maxillo-Facial Clinic in Düsseldorf and the Orthodontic Institute of the Hamburg health department. Attention is also directed to the International Military Conference for dental officers which will be held from July 7-13, 1962.

In addition the following scientific meetings will precede or coincide with the congress:

International Conference on Oral Surgery, July 1-4, 1962, at the Royal College of Surgeons of England, London, England.

Second International Conference on Oral Biology, July 2-5, 1962, Bonn, West Germany.

First International Conference on Dental Radiology, July 10, 1962, Bonn, West Germany. A Canadian, H. G. Poyton of the Faculty of Dentistry, University of Toronto, is a member of the organizing committee of the latter conference.

Both the oral biology and dental radiology conferences are part of the XIII International Dental Congress in Cologne and those intending to attend either of these conferences must be registered as members of the Cologne congress. Hotel accommodation will be provided in Bonn, together with direct transportation between Bonn and the Exhibition Grounds in Cologne. Inquiries and applications regarding these conferences should be directed to Professor G. Korkhaus, director of the *Universitätsklinik und Poliklinik für*



Felten, Hartzenbusch

Scenes from Cologne, West Germany, site of the XIII International Dental Congress of the *Fédération Dentaire Internationale*, July 7-14, 1962. Left, part of the "Dionysis" Roman mosaic located near the cathedral. Cologne dates back to the days of Colonia, a Roman outpost on the Rhine. Right, the foyer of the "Gürzenich", Cologne's banqueting hall.

Zahn-, Mund- und Kieferkrankheiten, Hans Böckler Strasse 5, Bonn, West Germany.

The Canadian Dental Association is sponsoring a group tour to the congress, as was done so successfully for the twelfth congress in Rome in 1957. Details of the tour have been sent to Canadian dentists by the official agents for the tour, Thomas Cook and Son Limited, 94 Adelaide Street West, Toronto. Enrolment forms for the congress are available at Association headquarters.

NEW ZEALAND

Caries Reduced 74 per cent after Fluoridation.—Reduction of 74 per cent in dental decay is reported at Hastings, New Zealand, according to the *New Zealand Dental Journal*. After six and one-half years of fluoridation, children who have been drinking fluoridated

water all their lives have had a reduction of 74 per cent in dental decay compared with 1954 base-line levels. Whereas 24.2 permanent teeth per hundred were decayed, missing or filled in 1954, only 6.3 are now affected.

Seven-year old children who had benefited from fluoridated water for most of their lives had a reduction of 57 per cent and eight-year olds, 48 per cent. Children aged nine years, whose teeth were already calcified when fluoridation began, had a reduction of 32 per cent.

As far as children completely free from dental decay were concerned there was in the case of five-year olds, a fivefold increase. The same increase applied to six-year olds. Among seven-year olds there was an eightfold increase in caries-free children.

UNITED STATES

Walter Reed Army Institute of Research.—A department of oral pathology has recently been established under the direction of S. N. Bhaskar at the Walter Reed Army Institute of Research, Washington. This department provides consultation in the management of oral lesions of unusual interest, gives a number of instructional courses in oral pathology and oral diagnosis, and maintains a registry of clinical oral pathology. All of these facilities are available to military and civilian dentists in Canada and the United States.

Forthcoming Dental Meetings.—The following meetings of dental societies have been scheduled for the fall and winter months of 1961-62:

The ninth annual scientific meeting of the Western Society of Periodontology will be held at the Tropicana Hotel, Las Vegas, March 18-20, 1962. The guest speaker will be Emanuel Cheraskin, professor and chairman of the Department of Oral Medicine, University of Alabama Medical Centre. Further information may be obtained from H. L. Levine, 9400 Brighton Way, Beverly Hills, California.

Professor Anderson Honoured by Toronto Academy of Dentistry.—At the opening dinner of the Academy of Dentistry, Toronto, on October 23, 1961, Professor P. G. Anderson was made honorary life member in the Academy of Dentistry in recognition of his outstanding services to the profession.

President of the Canadian Dental Association in 1954-55, and at various times chairman or member of the Association's Dental Services Committee, Council on Journalism, and Steering Committee, Dr. Anderson is also professor of Operative Dentistry and director of the Clinic, Faculty of Dentistry, University of Toronto.



P. G. Anderson

Ashley & Crippen

Canadian Dental Schools

UNIVERSITY OF TORONTO

Visitors from Southeast Asia and the United States.—Recent visitors to the school included S. Daengsvang, rector of the University of Medical Sciences, Thailand and S. Skulthai, director of postgraduate studies at that university. They are touring Canada under a Colombo Plan travel grant for the purpose of observation and study of postgraduate medical and dental courses. The development of a department of postgraduate studies for the Thailand university is the ultimate objective of their visit.

B. M. Dorsey of the Faculty of Dentistry, University of Maryland visited the Toronto dental faculty on December 1. The dental school which he represents is also planning new facilities.

Royal Canadian Dental Corps

QUEEN'S HONORARY DENTAL SURGEONS APPOINTED

Her Majesty Queen Elizabeth II has graciously approved the appointment of Colonel D. W. Henry, C.D., B.A., D.D.S. and Colonel H. R. McLaren, C.D., D.D.S., D.D.P.H., as Queen's Honorary Dental Surgeons.

Colonel Henry, Assistant Director of Dental Services, Quebec Command Dental Advisory Staff has been with the Corps since May 1941 when he was commissioned as a lieutenant. He was promoted Captain the same year and posted to England in December 1943. He served with No. 6 Company, Canadian Dental Corps in northwest Europe from April 1944 to November 1945, and was released from the Canadian Army "on de-

mobilization" in February 1946 and placed on the Reserve of Active Officers. In December of the same year he was appointed to No. 39 Base Dental Company, Montreal (later No. 53 Dental Unit [Militia]) in the rank of Captain. He was promoted Major in 1947, assumed command of the unit in September 1951, was promoted Lieutenant-Colonel in March 1952 and to his present rank and appointment in November 1956.

In civilian life Colonel Henry is associate professor of Prosthetic Dentistry, McGill University and director of Dental Services for Molson Breweries' Industrial Health Services.

Colonel McLaren, Assistant Director of Dental Services, Central Command Dental Advisory Staff was commissioned in the Canadian Dental Corps in September 1939. He was promoted to Captain in December of the same year and posted overseas with the 1st Divisional Dental Company. While overseas he was promoted Major and served in the United Kingdom, Italy and Sicily until September 1944 when he returned to Canada and was released in July 1945. He enrolled in the Royal Canadian Dental Corps Militia in May 1947 and in 1950 was promoted to Lieutenant-Colonel and appointed to command No. 7 Dental Company, Ottawa. He received his present appointment in September 1954 and was promoted to Colonel in August 1956.

Colonel McLaren resides in Ottawa and holds dual appointments in the Department of National Health and Welfare as principal dental officer, Indian and Northern Health Services and as consultant, Emergency Health Services, Dental Health Division.

BRIGADIER BAIRD ATTENDS EMERGENCY HEALTH SERVICES MEETING

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces attended a meeting of the Emergency Health Services Advisory Committee, of which he is a member, in Ottawa on November 20, 1961.

COLONEL ROGER PRESENTS PAPER

Colonel A. T. Roger, Command Dental Officer, Eastern Command presented a paper on oral surgery to meetings of the Saint John and Moncton Dental Societies.

CAPTAIN BISAILLON PROMOTED

Army Headquarters has announced the promotion of Captain G. I. J. Bisailon to the rank of Major effective October 27, 1961.

Major Bisailon was born at Blezzard Valley, Ontario, and attended high school in Capreol, Ontario. He received his B.A. degree at Sacred Heart College, Sudbury, graduating in 1942. He then joined the Royal Canadian Air Force and served in Canada and the United Kingdom until 1946 when he entered the Université de Montréal and graduated in dentistry in 1951. He has served



Recent Promotions. Pictured above are Major A. T. Hinch, left, of No. 35 Field Dental Unit in France and Major J. J. N. Wright, right, of the R.C.D.C. School who were promoted to their present ranks during the past few months.

continuously with the Royal Canadian Dental Corps since graduation in Central and Quebec Commands and completed a tour of duty with No. 4 Field Dental Company in Germany last summer. Major Bisailon is at present stationed at Camp Shilo. He is married with four children.

OFFICERS ATTEND COURSES

A number of Royal Canadian Dental Corps officers have recently attended courses at universities and service dental schools as follows:

Majors E. M. Cobb and I. A. C. MacDonald — Oral Diagnosis, Pathology and Surgery, University of Alberta; Major R. J. K. Pyne — Oral Radiology, University of Alberta; Major W. H. Murray—Endodontics, University of Michigan; Major D. E. McDermott—Minor Oral Surgery, University of Michigan; Captains J. G. Boucher and F. W. Lovely — General Oral and Dental Surgery, Royal College of Surgeons, London, England; Lt.-Col. G. McDougall, Major J. D. Bourque and Captain J. S. E. Doiron — Nuclear, Bacteriological and Chemical Warfare Course, Canadian Forces Medical Services Training Centre, Camp Borden.

SUMMER TRAINING AWARDS AT THE R.C.D.C. SCHOOL

The following officer cadets were recently awarded summer training awards at the R.C.D.C. School:

Second Lieutenant G. A. Johnson of Toronto, a fourth-year student at the University of Toronto, was awarded the Chief Instructor's Trophy for clinical proficiency.

Officer Cadet N. H. Andrews of St. John's, Newfoundland, and a fourth-year student at Dalhousie University, Halifax, was runner-up for the Chief Instructor's Trophy for clinical proficiency and shared the field Exercise Trophy with Officer Cadet Russell.

Officer Cadet C. M. Mason of Porcupine Plain, Saskatchewan, and a third-year student at the University of Alberta, was judged to be the "Outstanding Cadet" in 1961.

Officer Cadet W. E. Russell, a fourth-year student at Dalhousie University from St. Stephen, New Brunswick, was a triple winner being awarded the Honour Cadet Trophy, "Best All-Round Athlete" and the Field Exercise Trophy jointly with Officer Cadet Andrews.

Public Health

MINISTER REPLIES TO FLUORIDE EDITORIAL

J. Walter Erb, Saskatchewan Minister of Public Health recently replied to an editorial in the *Toronto Globe and Mail* on the subject of fluoride tablets. The Minister pointed out that his government does not favour the tablets over fluoridation of municipal water supplies. The text of the letter was as follows:

Your editorial of October 24, "Freedom of Choice," repeated an error which was the basis of similar remarks last year on the subject of the fluoride adjustment of public water supplies.

Your two editorials are misleading regarding fluoride adjustment of water supplies in Saskatchewan. It is true that the Department of Public Health gives fluoride tablets at public expense to certain rural parents who have the choice of whether to give them to their children or not. Your editorial did not tell the complete facts, and was therefore misleading. The tablets are supplied only for preschool children living in small centres and in farming areas where there is no piped public water supply which can be treated. Before any distribution of such tablets, the local water supplies are analyzed to determine whether there is a deficiency of fluoride in the water. In some places no deficiency has been found, and the tablets are therefore not provided.

Another fact omitted by your newspaper is that we consider the fluoride tablet program as an alternative dictated by rural conditions. Our department, in common with health departments throughout the continent, considers the adjustment of municipal water supplies far more satisfactory because it is bound to benefit far more persons, does not involve the parents in a daily chore, and because it is much cheaper. There are a number of small communities in Saskatchewan where distribution of the tablets was stopped when local sewer and water systems were installed.

In most of the Saskatchewan communities where the water supply is being "fluoridated," the step was taken by decision of the municipal councils, which, under provincial legislation, have responsibility for local law affecting the health and welfare of their citizens.

J. Walter Erb,
Minister of Public Health,
Province of Saskatchewan.

PERSONNEL IN THE NEWS

D. C. Bullen, who was previously regional dental consultant for the Kootenays in British Columbia, has recently taken up a new appointment as dental consultant for the Vancouver Island region. Dr. Bullen's headquarters are located in Nanaimo.

Research

C.D.A. GRANTS AID RESEARCH

Since the program began in 1947, thirty-seven Canadian Dental Association studentship grants have assisted twenty-four graduate students toward teaching and research careers. Eighteen of these graduates are now or have been on staff at Canadian dental schools and two are still in training.

In 1955 the studentship program was expanded to permit grants to undergraduates doing summer research work. Twenty-nine such awards have been made. Five of these individuals are now on staff at dental schools in Canada and ten are still undergraduates.

The Association's Council on Research is responsible for making the awards.

Record of studentships awarded by the Canadian Dental Association, 1948-1961.

Year	To graduates \$	To under- graduates \$	Travel, etc. \$	Total \$
1948	1,400 (2) *			1,400
1949	2,269 (4)			2,269
1950	2,300 (3)			2,300
1951	3,800 (3)		281	4,081
1952	1,700 (2)			1,700
1953	1,200 (1)		100	1,300
1954	3,660 (3)		455	4,115
1955	2,100 (2)	1,000 (1)		3,100
1956	5,620 (3)	400 (1)		6,020
1957	5,661 (3)	950 (3)	950	7,561
1958	12,385 (6)	4,513 (5)	1,170	18,068
1959	3,900 (2)	3,195 (4)		7,095
1960	2,500 (1)	5,375 (7)	200	8,075
1961	4,040 (2)	6,900 (8)	500	11,440
TOTAL to date				78,524

*Number in brackets is the number of awards

WORKSHOP ON ADHESIVE RESTORATIVE DENTAL MATERIALS

It has long been recognized that one of the dental research areas deserving a high priority for expanded investigation is that concerned with the development of a restora-

tive material or cement which will adhere to tooth structure.

To explore the current knowledge and to establish recommendations for future fruitful research, an initial workshop was held on September 28 and 29, 1961 at Indianapolis, Indiana. The plans for the workshop originated in the Dental Study Section, Division of Research Grants, National Institutes of Health, and the workshop was sponsored through a grant from the National Institute of Dental Research, U. S. Public Health Service to Indiana University. Twenty-eight active participants discussed (a) tooth structure, (b) principles of adsorption and adhesion in an aqueous environment, and (c) materials and test methods.

These discussions lead to a number of specific recommendations in regard to the direction which future research should take.

1. There is a need for increased knowledge of the tooth surface since it is enamel and dentine to which an intimate union must be attained. Additional information regarding apatite chemistry, the mechanism of recrystallization and formation of secondary dentine would be most helpful.

2. The possibility was suggested that an actual chemical bonding may not be essential and that forces of adsorption might be quite adequate for attaining the intimate relationship desired between the restoration and the tooth. It was the opinion that moisture in the tooth is the greatest deterrent to securing adhesion. Thus future research must include studies on how to wet a tooth surface and maintain that wetting. In this vein it was also pointed out that true adhesion can best be achieved only on very smooth surfaces which are free of debris since small bubbles or discrepancies in the film destroy the adhesion.

3. A number of resin systems for bonding with both the organic and inorganic portions of the tooth were discussed. It was the general consensus that greater possibilities lay in bonding to the inorganic structure of the tooth and that future work should probably follow in this direction. It was emphasized that the "geometry" of the entire system must be taken into consideration. Among other things this would include volume shrinkage occurring during polymerization of resinous materials and the form of the cavity preparation in order that stress at the junction of the tooth and restorative material could be minimized.

4. There is a definite need for the development of better and standardized test procedures for assessing adhesion. The feasibility of developing a standardized surface for testing adhesion was discussed along with the merits of marginal penetration tests and investigations of the strength of surface films.

In general, the conclusions of the workshop indicate that while there are many obstacles to the development of an adhesive restorative material, the problems are not insurmountable.

The entire proceedings of the workshop were transcribed and will be published. Copies will be available to interested per-

sons or institutions upon publication. Requests should be directed to the chairman of the workshop, Professor R. W. Phillips, Indiana University School of Dentistry, or to the co-chairman, Professor Gunnar Ryge, Marquette University School of Dentistry. Copies of the proceedings will be sent to all dental schools.

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

FUNCTIONAL RELATIONSHIP OF THE MAXILLA AND MANDIBLE

To the Editor:

For many years I have involved myself in a little more than casual study and observation of the maxillae and their functional relationships in mastication. Therefore the report of Dr. A. M. Hayes' investigation (J. Canad. D.A. 27:647, October, 1961), has interested me very much. My intensive study of the report has resulted in slight alteration of certain ideas which I have previously held. It is annoying to realize how little of a positive nature we know about this subject.

From the radiographic study of normal temporomandibular joints under various biting stresses, with what small appraisalment that can be made of the resultant stresses of opponent muscles of mastication, I have made certain deductions. Also, I have had the opportunity of observing the compensation

which occurs to re-establish function, in spite of surgical abnormalities. Therefore, I have gradually come to the conclusion that the functional movements of the mandible are largely the result of autonomic control, and are more biological than mechanical. The stresses produced by the muscles of mastication, during periods of development and growth, or in periods of adult readjustment seem to determine the contours of the glenoid fossa and the condylar head. The shape of these parts is a result, rather than a directing factor, of applied muscular stresses.

The biological concept of mandibular function does not necessarily conflict with the premise accepted by prosthodontists of mechanical control by the shape of the curves in the glenoid fossa. There is a certain analogy between the two, similar to the regimented control of an individual as compared to the limited freedom of action which he enjoys in a democratic society. The biological theory does explain, however, the reasonably efficient function obtained by condylectomy in the adult human, and in cases of non-union of fractures of the neck of the condyle. It also explains the joint readjustment which occurs in instances of occlusal malrelationship. These should not all be regarded as degenerative, although atrophic alterations occur in the joint, but rather as manifestations of the adaptive ability of the organism.

While all these generalizations may seem extraneous to a factual report of abnormal development of bone, I think that we have

to appraise fully the normal before we can understand the abnormal. My approach to the analysis of the abnormalities of anatomical structure demonstrated in Dr. Hayes' report, is based upon the assumption that these are a result of a set of stimuli produced by altered muscular stresses. These factual observations of abnormality seem to me to afford further evidence as to the normal muscular function and control of mandibular action. The premise which I am assuming is that the temporomandibular joint, in normal function, is not the fulcrum of a lever, but is maintained in a more or less stress-free status under binding strains by the combined action of the external masseter and the internal pterygoid muscles working in co-ordinated opposition to the temporalis muscle. This co-ordinated muscular action produces the various resultant forces required for incision or mastication.

The most striking feature of Dr. Hayes' report was the elongation of the coronoid process, together with the fibrous attachment of the stump to the mandibular fossa area. These two features in my opinion are complementary in character and afford an amazing example of the capacity of the organism for emergency repair. I have a fairly firm conviction that the normal temporomandibular joint, with the head of the condyle as a fulcrum, should not be considered a third-class lever. However, with Dr. Hayes' specimens, with the stump of the condyle firmly attached by what amounts to a ligament, that side of the mandible is undoubtedly a third-class lever, but one in which the direction of stress is exactly the opposite to that which was supposed to be exerted on the head of the normal condyle.

The whole pattern of development of the masticating equipment on the operated side is akin to a rapid evolutionary change in the organism to meet the requirements of survival. The elongation of the coronoid process, with the shortening of the ramus, greatly increases the mechanical advantage of the temporalis muscle. Now that this side of the mandible is functioning as a third-class lever, evidently a more powerful pull is required by that muscle to equalize the stress imposed on the incisor teeth by the normal musculature of the opposite side.

Dr. Hayes has demonstrated that the external masseter muscle has partially atrophied as a part of the altered pattern of development. This is what would be expected of a muscle whose main function, in a normal pattern of mastication, is to work as an opponent to the temporalis muscle, and prevent downward displacement of the head of the condyle in the incising bite. This function ended with the fibrous attachment of the stump to the mandibular fossa. The degree of atrophy which occurred would depend

upon the amount of other function remaining to it.

I cannot understand why the animals operated upon at a younger age consistently appeared to have a greater deviation of the mandible. If, as I think probable, the internal pterygoid muscle, due to its slight mesial angle of pull, would tend to take over some of the function of the external pterygoid muscle, I should think that there would be greater developmental compensation with the younger rats, and hence less deviation. Further investigation may shed more light on this point.

I am quite sure that Dr. Hayes is much more capable of assessing the developmental tendencies in bone under muscular stresses than I am. Therefore, I will not attempt to speculate on the why and wherefore of the change in configuration of the operated side from the normal. I can only suggest a theoretical alteration of muscular stresses to which this bone has been subjected. There is one other muscle, the internal masseter, which may affect the zygoma in this way. Its stress is exerted downward and slightly forward, on the inner surface and lower border of the zygoma. This stress is less compensated by the partially atrophied external masseter muscle, which normally exerts an outward pull, as well as downwards and backwards. There seems to be some indication in Figure 8b of Dr. Hayes' report that there is a mesial displacement and thickening of the zygoma on the operated side, indicating compensation for stress. It should be considered also that there must be a wholly new, and downward stress, on the surface of the mandibular fossa to which the stump of the condyle is attached by the fibrous scar tissue.

I have found Dr. Hayes' report most interesting. It has revived my interest in a subject which with me has been more or less static for the past few years. It may well be that Dr. Hayes' research project, while investigating one problem, has found the key to another of great importance.

G. M. Logan, D.D.S.,
Camp Hill Hospital,
Halifax, Nova Scotia.

ONTARIO FLUORIDATION INVESTIGATING COMMITTEE REPORT

To the Editor:

The following quotation from the *Official Report of the Legislature of Ontario Debates*, dated November 27, 1961, contains a public

expression of regret for misstatements attributed to me in my evidence before the Morden Commission on Fluoridation:

(Hon. M. B. Dymond, Minister of Health):

"Mr. Speaker, before the orders of the day I would like to draw your attention and through you the attention of the hon. members of this House, to a statement which appears in paragraph 178, page 81, of the "Report of the committee appointed to inquire into and report upon the fluoridation of municipal water supplies". This reads as follows:

"Although one witness, a qualified dentist and physician, stated that, 'We don't need to fill deciduous teeth', this seems to us to be contrary to good dental practice since a 'clean mouth' implies cared-for teeth."

"The witness, who claims to have good reason to believe he is the one referred to in this paragraph, approached me after the close of the last session of the Legislature, asking that this be corrected publicly in such manner as to show that this statement in the report did not even convey the meaning of the statement he gave in evidence. His evidence, which is to be found on page 2213, lines 4, 5 and 6 of the transcribed evidence, shows very clearly that what he actually said differs greatly from the statement reported. The transcript of evidence reads as follows:

"I would like to go on record as saying that it is not necessary to fill with fillings of durable nature deciduous teeth."

"The witness is Dr. Samuel W. Leslie of Toronto—physician, surgeon and dental surgeon. I am quite sure this hon. House would have me bring this to public attention and express our regret that the report of Dr. Leslie's statement did not convey the same information he gave in his testimony.

"At the time that this report was tabled, Dr. Leslie was in Europe, and as soon as he came back and read the report he contacted my office. I spoke to the chairman of the committee, the late Mr. Justice Morden, who expressed very great regret on his own behalf that the meaning of the doctor's testimony was not fully brought out in the report. Unfortunately, Mr. Justice Morden died before he contacted Dr. Leslie, as was his intention.

"Dr. Leslie is very much concerned about this because this reported testimony of his has been very much misunderstood by his professional colleagues."

S. W. Leslie, M.D., D.D.S.,
386 Bloor Street West,
Toronto 4, Ontario.

BOOK REVIEWS

PATHOLOGY

W. A. D. Anderson. Ed. 4. St. Louis. C. V. Mosby Co., 1961. 1,389 p. Illus. \$18.00

This book contains the usual chapters on general and special pathology written by thirty-five outstanding authors, presenting a wealth of information in various styles ranging from the poetic to the concise, and presenting various viewpoints from Cohnheim's approach to the atomic age approach.

In this type of joint work some overlapping is inevitable; however, this may be considered an advantage for the beginner. Certain chapters on general pathology, which can be found in smaller books, such as de-

velopmental defects, disturbances of growth other than neoplasia, heredity, etc., are lacking.

Dentists will use the book to refresh their knowledge of general pathology or to seek information on diseases extending beyond the scope of oral pathology. In some cases it might be time-consuming to find the desired information. The chapters embrace twenty to forty pages and their subdivisions do not follow the same order. The outline of subtitles we are accustomed to finding in most recent books at the beginning of each chapter or in the list of contents is lacking. The index may help to a certain extent, yet this reviewer's random check showed that a good number of items or even subtitles of the text were not listed in the index. This, however, is common to many other books.

The dentist will certainly be more than satisfied by the chapters on special pathology of the organs (and probably the physician will be similarly rewarded by the chapter on oral pathology). Dentists might regret that there is not more information on subjects like chemical, nervous, or hormonal factors in inflammation, focal infection, cysts, etc.

Taken as a whole, the book is a valuable text on pathology. There is an adequate list of references at the end of each chapter, the greater part being of recent date. Illustrations, colour plates, paper and binding are of a high quality.

In contrast to the recent flood of books on pathology, *Anderson's Pathology* may be compared with works such as those of Boyd and Robins. Anderson's volume exceeds the other two in the number of pages, figures and authors. A choice between these books would depend upon the reader's preference for the style of book rather than a difference in quantity and quality of material.

Z. Mézl

SIR JOHN TOMES, PIONEER OF BRITISH DENTISTRY

Z. Cope. London, *Dawsons of Pall Mall*, 1961. 108 p. Illus. £1. 5s. 0d.

This short story by Sir Zachary Cope is an overdue tribute to a man whom he describes as the "father of British dentistry". This is not too high praise for a remarkable man. While our close link with dental history in the United States has made us alive to the great work of Miller, Black and Williams, without in any sense overlooking the great strides that these men made, we should, at the same time, pay tribute to this great English dentist. His contributions, so well emphasized by Sir Zachary Cope, would have been outstanding in any country. We, today, scarcely even refer to Tomes' name, except by referring to the Tomes Fibrils of dentine. He was well known to an earlier generation of dentists on this continent where the book, *A System of Dental Surgery* by John Tomes was a classic text in dental schools in earlier days of the United States and probably also in at least the Toronto dental school.

The copy which this reviewer has in his library is the first edition and was published by the John Churchill Company of London in 1859. There were subsequent editions published on the European continent and in the United States.

Sir John Tomes was born in 1815 at Weston on Avon, England. It was a time when dentistry was beginning to emerge as a definite calling in England as a result of the writings of Joseph Fox, starting in 1799, and Thomas Bell who brought out his dental textbook in 1829. Tomes had no early interest in dentistry, but published an article on the design of dental forceps in 1841, shortly after he had made the decision to practise dentistry. His early training was entirely medical as a student and resident at Middlesex Hospital, London. He was made a fellow of the Royal Society about 1850, for his comparative anatomy studies and it was to that society he reported his work on the dentine fibrils. He carried out a great amount of original investigation while at the same time carrying on an extensive dental practice. In 1856, his inventive genius in the field of instrument design, as well as his microscopical discoveries concerning bone and dentine would have given him recognition in English dentistry. Yet, his great work in raising the status of dentistry in England was still in the future. By 1842, he had started to obtain from parliament formal recognition for dentistry in England. He was successful in having a board of examiners set up for the license in dental surgery by 1860 and the College of Dentists had by 1859 started the Metropolitan School of Dental Science, giving the diploma M.C.D.E., Member of the College of Dentists of England. He took an active part in the passage of the British Dental Act in 1878 and the incorporation of the British Dental Association in May, 1880.

The establishment of the Dental Register and foundation of the British Dental Association and Dental Board of the General Medical Council (now the General Dental Council) rounded out the achievements of Sir John Tomes for English dentistry. He retired from practice in 1876, was granted an honorary fellowship of the Royal College of Surgeons in 1883 and died in 1895.

This short book of just over one hundred pages is well printed and indexed, and contains several pictures of early equipment.

J. Stanley Bagnall

ADDITIONS TO THE LIBRARY

- ADRIANI, J. ed. Appraisal of current concepts in anesthesiology. St. Louis, Mosby, 1961. 279 p. \$7.75.
- COPE, Z. Sir John Tomes; a pioneer of British dentistry. London, Dawsons of Pall Mall, 1961. 108 p. illus. \$4.50.
- DENTAL CLINICS OF NORTH AMERICA, November 1961. Symposium on pedodontics. Philadelphia, Saunders, 1961. 290 p. illus.
- HOLLAENDER, A. ed. Radiation protection and recovery. New York, Pergamon Press, 1960. 392 p. \$10.00.
- LARGENT, E. J. Fluorosis; the health aspects of fluorine compounds. Columbus, Ohio State University Press, 1961. 140 p. \$3.50.
- LINDELL, B. and DOBSON, R. L. Ionizing radiation and health. Geneva, World Health Organization, 1961. 81 p. \$1.00.
- MARMER, M. J. Hypnosis in anesthesiology. Springfield, Thomas, 1959. 150 p. \$7.50.
- NEUSTADT, E. A practical system of orthodontics. New York, The Fairfield Press, Inc., 1961. 816 p. illus. \$28.50.
- NEVIN, J. J. Your practice management manual. Chicago, Coe Laboratories, Inc., 1961. 126 p. illus. \$5.50.
- LES PARODONTOPATHIES. Rapports et Communications du XVème Congrès de l'Association des Recherches sur les Parodontopathies (ARPA Internationale). Vienne, 15-20 septembre 1960. Baden, Autriche, Rudolf M. Rohrer, 1960. 452 p. illus.
- PICKARD, H. M. A manual of operative dentistry. Toronto, Oxford University Press, 1961. 154 p. illus. \$5.25.
- PRUZANSKY, S. ed. Congenital anomalies of the face and associated structures. Springfield, Thomas, 1961. 385 p. illus. \$14.50.
- SHARP, J. A history of the Connecticut State Dental Association. New Haven, Van Dyck Co., 1956. 262 p. illus. \$5.00.
- WALKER, D. G. Malformations of the face. Edinburgh, E. & S. Livingstone Ltd., 1961. 202 p. illus. \$6.75.

The February 1962 issue features

PAEDODONTIC PRACTICE IN CANADA

seven specially prepared articles on

Child Management
Common Paedodontic Problems
Practice Administration
Preventive Orthodontics
Caries Control Measures
Traumatic Injuries to Teeth
Medication

to assist the practising dentist in providing dental care to the children of his community.

La livraison de février 1962 est
consacrée à

LA PEDODONTIE AU CANADA

Maniement de l'enfant
Problèmes de pédodontie
Administration du cabinet
Orthodontie préventive
Prévention de la carie
Traumatismes sur les dents
Médication

sept articles avec renseignements pour l'omnipraticien au service des enfants de sa localité.

IN MEMORIAM

ROBERT VERNEY HALL — Dr. Robert Verney Hall of Desoronto, Ontario died on August 28, 1961. He was 79. Dr. Hall was born in Toronto, Ontario, in 1882. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1912. Over the years he practised in various Ontario towns, settling in Desoronto in 1955. Surviving him is his daughter, Mrs. Martha Swann of Worthington, Ontario.

FRANK CAISTER HARWOOD — Dr. Frank Caister Harwood of Victoria, British Columbia, died on November 9, 1961. He was 81. Dr. Harwood was born in Oxford county, Ontario in 1880. He studied dentistry at the Philadelphia Dental College, graduating in 1905. From 1919 to 1958 he practised in British Columbia. He retired in 1958.

WILLIAM STANLEY HOSKEN — Mr. William Stanley Hosken of Hamilton, Ontario died on November 10, 1961. Mr. Hosken was born in Cornwall, England, coming to Canada at an early age. He later joined the staff of the well-known firm of Allen & Rollaston, Limited, Toronto with which he was associated all his business life. In 1932 he opened Allen & Rollaston (Hamilton) Limited, acting as vice-president until his death. He was a member of the Ontario Dental Laboratory Association and the Toronto Study Club of Dental Technicians.

WILLIAM JOHN MacMURRAY — Dr. William John MacMurray of Toronto, Ontario

died on November 10, 1961. He was 81. Dr. MacMurray was born in Ballymena, Ireland in 1880. He received his early education in Woodstock, Ontario. Later he studied at the Royal College of Dental Surgeons of Ontario and graduated in 1903. From that time Dr. MacMurray has practised in the United States and in Canada. He is survived by his daughter Margaret; a son, Brock; and a sister, Mrs. George Wallace of Thamesford, Ontario.

JAMES GORDON MILLAR — Dr. James Gordon Millar of Lethbridge, Alberta, died on October 29, 1961. He was 54. Dr. Millar was born in Taber, Alberta where he received his early education. He studied dentistry at the University of Toronto, graduating in 1936. He was subsequently associated with Dr. Gibson of Lethbridge for two years. In 1938 Dr. Millar set up his own practice in which he was active until his recent illness. Surviving him are his wife, Muriel; a daughter, Miss Linda Millar of Toronto; a brother, Angus B. Millar, and two aunts, Mrs. A. Shaw of Medicine Hat and Mrs. G. Galoway, Vancouver.

EDWARD AARON ROOS — Dr. Edward Aaron Roos of Mount Forest, Ontario died on November 8, 1961. He was 72. Dr. Roos was born in Galt, Ontario in 1889. He attended the Royal College of Dental Surgeons of Ontario and graduated in 1914. He is survived by his wife, Frances and a daughter, Margaret, of Whitby, Ontario.

CANADIAN DENTAL ASSOCIATION RETIREMENT SAVINGS PLAN

Statement of Unit Valuation as of November 30, 1961

GOVERNMENT BOND FUND

Investment at market value	\$191,950.85
Accrued income (interest)	840.51
Cash on deposit at interest	124.08
TOTAL	\$192,915.44
Less: Administration fee of $\frac{1}{8}$ of 1% of \$192,915.44	241.14
MARKET VALUE OF FUND	\$192,674.30
Units outstanding	16,958.675
UNIT VALUE OF FUND	\$ 11.361

CORPORATE BOND FUND

Investment at market value	\$322,109.89
Accrued income (interest)	1,487.20
Cash on deposit at interest	101.98
TOTAL	\$323,699.07
Less: Administration fee of $\frac{1}{8}$ of 1% of \$323,699.07	404.62
MARKET VALUE OF FUND	\$323,294.45
Units outstanding	27,081.822
UNIT VALUE OF FUND	\$ 11.937

COMMON STOCK FUND

Investment at market value	\$729,964.29
Accrued income (interest)	—
Cash on deposit at interest	31.29
TOTAL	\$729,995.58
Less: Administration fee of $\frac{1}{8}$ of 1% of \$729,995.58	912.50
MARKET VALUE OF FUND	\$729,083.08
Units outstanding	47,461.230
UNIT VALUE OF FUND	\$ 15.361

Trustee: The Royal Trust Company.

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Vancouver, where the 61st annual meeting of the Canadian Dental Association will be held this year in conjunction with the 46th annual meeting of the British Columbia Dental Association in a city which is said to have one of the most beautiful natural settings in the world. Her miles of swimming beaches, mighty mountains, modern hotels and beautiful gardens beckon every dentist to an inspiring convention program to be held at the splendid new Queen Elizabeth Theatre.

CANADIAN DENTAL ASSOCIATION

SIXTY-FIRST ANNUAL MEETING

VANCOUVER, BRITISH COLUMBIA

BOARD OF GOVERNORS' MEETING: MAY 30-JUNE 2, 1962

CONVENTION: JUNE 3-6, 1962

CONDENSED PROGRAM

C.D.A. FEATURE PANEL ON SOCIO-ECONOMIC TRENDS IN HEALTH SERVICES

Mr. A. Andras	Director of Legislation, Canadian Labour Congress, Ottawa
Dr. M. G. Taylor	Principal, University of Alberta at Calgary, Alberta

CLINICIANS AND ESSAYISTS

Dr. J. A. Anderson, Chicago	Practice Management, including Time and Motion Study, Office Design and Employment of Dental Auxiliaries
Dr. R. Haney, Los Angeles	Psychology for Dental Patients
Dr. K. Cantwell, Portland	High Speed Procedure in Operative Dentistry
Miss L. Kryer, Seattle	The Auxiliary's Role in Patient Education
Dr. P. Fleege, Seattle	The Use of Auxiliary Help
Dr. R. J. O'Neil, Vancouver	Paedodontics
The Wasatch Study Group, Salt Lake City	Closed Circuit Television Demonstrations by Five Dentists and Three Dental Assistants
Panel Discussion on Group Practice	Grieve Memorial Lecture

CANADIAN SOCIETY OF ORTHODONTISTS
(Orthodontic Section of the Canadian Dental Association)

Dr. A. G. Brodie, University of Illinois, Chicago
 Essayist: Sunday morning, June 3, 1962
 Grieve Memorial Lecturer: Monday afternoon, June 4, 1962

Dr. E. H. Hixon, University of Oregon, Portland
 Essayist: Monday afternoon, Tuesday morning and Tuesday afternoon, June 4-5, 1962

SOCIAL FUNCTIONS

Sunday Evening Musicale, including refreshments and opportunity for early registration
Dance Cruise up Howe Sound on a "Princess" Ship
Post-Convention Tours to Seattle World's Fair, Hawaii, Alaska or Cologne
Ladies' Program Golf Tournament

Attend the national convention and at the same time see some of Nature's most inspiring handiwork. Visit Vancouver's famous Stanley Park with its encircling driveway, harbour view, bridle paths and trails, beaches, picnic grounds, swimming pools, gardens, rockeries, fountains, zoo, sports areas, lakes and streams and scenic settings. Following the convention, visit the nearby Okanagan, Cariboo, Kootenays and Vancouver Island and enjoy their scenic beauty, excellent fishing or delightful atmosphere of rest.

REGISTRATION FORM

Annual Meeting

CANADIAN DENTAL ASSOCIATION

BRITISH COLUMBIA DENTAL ASSOCIATION

c/o British Columbia Dental Association
925 West Georgia Street
Vancouver 1, British Columbia

Vancouver, British Columbia
June 3-6.1962

NAME

ADDRESS

CITY PROVINCE

WIFE'S NAME

Golf — Yes ☐ No ☐

REGISTRATION FEE

Single: \$40.00 Wife: \$10.00

Make cheques payable to: C.D.A. 1962
Convention. Fee includes C.D.A. Luncheon,
B.C.D.A. Luncheon, B.C. College of
Dental Surgeons Luncheon, Boat Cruise
and President's Ball.

Enclosed is cheque No. for \$

HOUSING ACCOMMODATION APPLICATION

(To be completed and returned with the above form)

Please reserve the following accommodation
(Order of choice indicated by 1-2-3 in space provided)

	Single	Double	Twin	Suites
Hotel Devonshire		\$10.50-13.50 ☐	\$12.50-15.00 ☐	\$21.00-25.00 ☐
Hotel Georgia	\$10.00-12.00 ☐	\$13.00-13.50 ☐	\$13.50-14.50 ☐	
Hotel Ritz	\$ 8.50-11.00 ☐	\$11.00-15.00 ☐	\$11.00-15.00 ☐	
Hotel Vancouver	\$10.00-15.00 ☐	\$13.00-19.00 ☐	\$13.50-20.00 ☐	\$29.00 up ☐
Bayshore Inn	\$11.00-13.00 ☐	\$14.00-16.00 ☐	\$15.00-17.00 ☐	\$25.00-65.00 ☐
Georgian Towers	\$ 9.00-13.00 ☐	\$13.00-15.00 ☐	\$15.00-17.00 ☐	
Berrard Motel		\$11.00-13.00 ☐	\$13.00 ☐	
Sands Motel	\$ 9.50-10.50 ☐	\$12.50-13.50 ☐		

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Reservations will be made in order of their arrival. Advanced registration will be very much appreciated. Hotel accommodation can only be guaranteed until May 15. A cheque to cover registration must accompany every application. Certificates for reduced rail fare will be made available from C.D.A. headquarters.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario (Centennial Celebration of Dentistry in Canada)	May

FUTURE EVENTS

Date	Function	Location	Officer	Address
Jan. 25, 1962	Academy of Dentistry, Toronto, 1st Stated Meeting	Faculty of Den- tistry, University of Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario
May 13-16, 1962	Ontario Dental Association Convention	Royal York Hotel, Toronto	Mrs. A. Durham	230 St. George Street, Toronto 5, Ontario
24-26 mai, 1962	Congrès de l'Association dentaire de la province de Québec	Hôtel Chicoutimi, Chicoutimi	Dr. J. C. Simard	397 Racine Est, Chicoutimi, P.Québec
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eaton	Farquhar Bldg., Halifax, Nova Scotia
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany

POSTGRADUATE AND REFRESHER COURSES (CANADA)

DALHOUSIE—The Department of Periodontics offers a postgraduate course in PERIODONTICS for the general practitioner, March 5-9, 1962. The course will be directed by Dr. J. Findlay with Dr. C. H. M. Williams, professor of Periodontics, University of Toronto, as guest lecturer. Tuition fee \$75. Inquiries and requests for application forms should be directed to the Dean, Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia.

TORONTO—The Department of Dental Oral Surgery offers a postgraduate course in ORAL SURGERY, April 23-27, 1962. Management of surgical problems met by the dental practitioner will form the basis for this review of the general principles of surgery. Instruction will be given in anaesthesia for dental operations. Problems of diagnosis, systemic factors relating to oral surgery, chemotherapy, pre- and postoperative case management will all be covered. Specific problems discussed will include jaw fractures, sinus involvement, cysts, root resection, abnormal fraena, malposed and impacted teeth, cellulitis and deep neck infections. The course will be directed by Dr. A. A. Antoni and associates.

The Department of Periodontics offers a postgraduate course in PERIODONTICS, May 8-12, 1962. Periodontics and the general practice of dentistry will form the theme of this course. The diagnosis of abnormalities of the supporting structures of the teeth will be reviewed, as well as the principles of case management. Treatment procedures will be demonstrated using patients. Sessions will include the broader aspects of oral medicine, and the relationship of all of these abnormalities to other dental treatment procedures. The course will be directed by Dr. C. H. M. Williams and associates.

The Faculty of Dentistry will offer a course leading to the Bachelor of Science in Dentistry degree in the field of ANAESTHESIA AS APPLIED TO DENTISTRY. This full-time course will extend over a period of twelve months beginning in September 1962. The final date for receiving applications is March 1, 1962.

Inquiries and requests for application forms should be directed to the Chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 2, Ont.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

ALABAMA—February 3-4, 1962—General Anaesthesia (Course limited to certified oral surgeons)

ALABAMA—February 10-12, 1962—Functional Aesthetic Restorative Procedures

ALABAMA—February 24-26, 1962—Removable Orthodontic Appliances (Course limited to practising orthodontists)

ALABAMA—March 2-4, 1962—Restorative Dentistry

COLUMBIA—April 2-6, 1962—Segmented Arch Technique

OHIO STATE—April 2-4, 1962—Hypnosis in Dentistry

TEMPLE—March 7-8, 1962—Electronic Electrosurgery

TEMPLE—March 30-31, 1962—Transographics Seminar

TEMPLE—April 2-6, 1962—Immediate Surgical Endodontics

TUFTS—April 5-7, 1962—Prosthetic Procedures for the Periodontal Problem

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters upon request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institution.

L'Association Dentaire Canadienne.

JOURNAL

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Une nouvelle méthode du diagnostic des pathologies pulpaire*

par HENRYK SILBERT, L.S.D., D.D.S., Montréal, P.Qué.

INTRODUCTION

L'examen histo-pathologique et bactériologique d'un grand nombre de pulpes ne correspond pas toujours au diagnostic posé après un examen clinique sérieux basé sur la radiologie et la vitalométrie. Le praticien, pour comprendre les motifs de ses traitements, leur orientation, les causes de ses échecs et la façon de les

réparer, a besoin de connaître le sens et l'évolution de la maladie pulpaire.

L'histo-pathologie des lésions pulpaire nous fournit une classification des lésions d'une façon trop rigoureuse. La thérapeutique, malheureusement, n'offre pas la variété des solutions thérapeutiques que réclament les images histologiques.

L'envahissement progressif de la pulpe se fait le plus souvent en partant de la carie; c'est donc la pulpe coronaire qui est la première touchée et la lésion qui s'y crée est habituellement plus grave que celle de la pulpe radiculaire. La

*Les microphotographies viennent du service d'histopathologie de la faculté de chirurgie dentaire de l'Université de Montréal, dont le chef est le docteur Z. Mézi.

symptômatologie pulpaire est bien délicate et difficile à fixer d'une façon précise. La même pulpe peut présenter en même temps deux stades pathologiques différents: des micro-abcès localisés au niveau de la pulpe camérale et une hypérémie simple de la pulpe coronaire. Les excitants thermiques et électriques susceptibles de déterminer des réactions pulpaires atteignent plus facilement la couronne que la racine.

Ces constatations expliquent la nécessité de rechercher des moyens plus précis pour établir le diagnostic des altérations pulpaires.

LES AVANTAGES DE L'EXAMEN DU SANG PULPAIRE APRÈS TRÉPANATION

Prader, dans un ouvrage récent¹, a proposé d'utiliser l'examen du sang prélevé de la pulpe pour préciser le diagnostic des altérations pulpaires. Prader utilise cette méthode depuis dix ans.

Une dent atteinte de pulpite aiguë diagnostiquée cliniquement saigne abondamment à l'ouverture de la chambre pulpaire. L'examen histologique et bactériologique du parenchyme pulpaire révèle une pulpite aiguë accompagnée de nécrose incipiens. L'examen de la série blanche révèle une augmentation prononcée des éléments leucocytaires (leucocytose), en présence d'un grand nombre de neutrophiles. Au point de vue clinique, le traitement d'une pulpite aiguë se résumerait à l'extirpation de la pulpe (dévitalisation) suivie de l'obturation du canal. Selon Prader, ce traitement serait erroné, car une pulpite accompagnée de nécrose, à son début, exige une stérilisation du canal avant son obturation définitive. En conclusion, Prader précise qu'une pulpe atteinte de nécrose, à son début, peut encore saigner et que, dans ces cas, l'obturation d'un canal, qui n'a pas été stérilisé, conduit à un échec. Cette constatation démontre l'importance de l'examen du sang pulpaire avant d'orienter le traitement.

L'examen du sang pulpaire permet aussi de différencier entre une pulpite toxique

et une pulpite infectieuse, surtout quand l'étiologie de la pulpite est obscure. Ceci vaut pour une pulpite hémotogène, une pulpite provenant d'une extension d'une poche périodontaire infectieuse et d'une pulpite qui se déclare au-dessous d'une vieille obturation métallique. Cette méthode nous fournit les indications sur la possibilité de l'amputation vitale (coiffage pulpaire direct et pulpotomie) ou sur la nécessité de l'extirpation totale de la pulpe après l'avoir exposée accidentellement au cours de l'ablation de la carie.

Cette méthode permet finalement de diagnostiquer une pulpite infectieuse provenant d'une poche périodontaire (présence des leptotriches granulo-mateux et segmentaires et aussi des spirochètes buccalis).

TECHNIQUE DE PRÉLÈVEMENT

Avec des précautions aseptiques, Prader, après avoir piqué la pulpe, en prélève la première goutte de sang et, après étalage et coloration, procède à un décompte des globules blancs.

Prader insiste sur la première goutte de sang sortie du parenchyme pulpaire, car seulement cette première goutte de sang donne une vraie image de l'état de la pulpe.

Anesthésie de la dent. Mise en place de la digue et stérilisation du champ opératoire. Ablation de la carie. Nettoyage de la cavité avec Zonite ou peroxyde tiède pour éliminer les débris de la carie. Précautions pour ne pas exposer à ce moment la pulpe. Désinfection de la cavité avec metaphen décoloré et assèchement à l'alcool. Trépanation du plafond pulpaire en faisant une petite perforation avec une fraise à fissure stérile.

A la suite de cette petite perforation, la première goutte de sang apparaît dans la cavité asséchée. Il s'agit maintenant de prélever cette goutte de sang avec une précelle stérile et de l'étaler sur une lame de verre nettoyée à l'alcool. La coloration au laboratoire se fait selon la méthode Pappenheim, May, Grünwald ou Giemsa Romanowski ou aussi par la

méthode de coloration rapide au bleu de méthylène. Prader, après coloration, procède à l'examen qualitatif et quantitatif de la série blanche du sang au microscope (hémogramme pulpaire). Après la prise de sang, coiffage provisoire avec Pulpdent en attendant le résultat de l'examen qui décidera du plan de traitement. Cet examen se fait en quinze minutes.

INTERPRÉTATION DE L'EXAMEN MICROSCOPIQUE

Le sang d'une pulpe intacte est identique au sang périphérique du patient. La pulpe, dès qu'elle est soumise à une irritation, change son aspect local en mettant en évidence les éléments hématologiques, les sérums et les microorganismes. Le compte leucocytaire présente un intérêt particulier. Une pulpite toxique est accompagnée d'une chute du nombre des leucocytes qui tombe de 7,000 à 4,000 et parfois peut atteindre le chiffre de 1,000 à 2,000. Au contraire, une pulpite infectieuse s'accompagne d'une élévation du nombre des leucocytes qui passe de 7,000 à 8,000 pour atteindre le chiffre de 15,000 à 20,000.

La décomposition avancée de la pulpe se caractérise par un chiffre très élevé de leucocytes, 50,000. Le sang pulpaire peut aussi subir des changements qualitatifs causés par des irritants toxiques provenant de caries. Pendant l'inflammation toxique (pulpite toxique), il se produit une lymphocytose (normal, 26-augmentation, 38) et aussi une monocytose (normal, 9 augmentation, 18). Le nombre des neutrophyles reste constant (55-65).

Cette constatation suggère une pulpite toxique non infectieuse susceptible d'être traitée d'une façon conservatrice (coiffage ou pulpectomie). Le rapport érythrocytes-sérum précise le diagnostic d'une inflammation séreuse, s'il y a augmentation de sérum. Une augmentation massive des neutrophyles indique une destruction toxique, donc une inflammation destructive nécessitant une désinfection, après extirpation totale de la pulpe.

La présence de polymorphonucléaires signe l'interdiction de tout procédé pour la conservation de la vitalité de la pulpe. L'augmentation du nombre des leucocytes (leucocytose) indique la formation d'un abcès intra-pulpaire et motive l'exérèse totale de la pulpe et la désinfection du canal radiculaire.

L'INVASION PULPAIRE PAR LES MICROORGANISMES

Dès que les premiers microorganismes gram-positifs atteignent la pulpe, le nombre des neutrophiles et des leucocytes en segmentation augmente. Des éléments histiocytaïres se retrouvent encore à cette phase, malgré une invasion bactérienne prononcée. La pulpe, dans cet état, peut encore, au point de vue clinique et thérapeutique, supporter une pulpectomie.

Dès que l'invasion bactérienne pulpaire est plus prononcée et qu'elle se prolonge, l'aspect du sang pulpaire change complètement: le nombre des neutrophiles augmente considérablement en passant de 55-65 à 70-80, pour atteindre le chiffre de 100. Le nombre des lymphocytes tombe de 26 à 15-19, pour atteindre un chiffre

TABEAU 1

Absence d'infection	Infection légère	Infection massive
		décomposition pulpaire dégénérescence leucocytaire
amputation vitale	dévitalisation	extirpation pulpaire
coiffage pulpaire	(extirpation sans	suivie d'une désinfection
pulpotomie	désinfection du canal)	du canal

normal de 1-2 (lymphopénie). Le comportement des monocytes est analogue (monocytopénie de 2-3).

Ce changement radical s'accompagne d'une augmentation des leucocytes qui peuvent atteindre le nombre de 50,000. Le sang, au point de vue qualitatif, subit aussi un changement, car les neutrophiles démontrent un aspect de vacuolisation avec des signes de dégénérescence. Une destruction cellulaire s'amorce. Au point de vue clinique et thérapeutique, une pulpe, à ce stade, doit être extirpée complètement et son canal désinfecté soigneusement avant l'obturation finale.

T. J. Guthrie² a rapporté que l'hémogramme provenant d'une pulpe exposée

peut aider à la sélection des dents qui peuvent subir une amputation pulpaire vitale. Un examen de la série blanche avec un compte différentiel des cellules du sang pulpaire (hémogramme pulpaire) était effectué sur 53 dents temporaires et permanentes dont les pulpes étaient exposées par la carie et sur 14 pulpes normales non exposées. L'hémogramme pulpaire était comparé avec l'hémogramme périphérique des patients. Après le prélèvement du sang pour l'hémogramme, les dents étaient extraites en vue de la préparation de sections histologiques. Guthrie a préparé un rapport sur l'examen clinique, histologique et hématologique des dents examinées. Il a classifié, en se basant sur l'extension de l'inflammation pulpaire, les dents en deux groupes, favorables et non favorables. Le résultat de cet examen démontre la présence d'un nombre plus considérable et normal de lymphocytes dans les deux groupes. En même temps, il démontre un nombre accru des neutrophiles dans le groupe non favorable. Souvent les mêmes cellules démontrent des signes de dégénérescence et de karyolyse. Les pulpes normales présentent à l'examen un hémogramme avec un compte lymphocytaire normal. Selon l'auteur, les différentes procédures s'avèrent insuffisantes pour déterminer l'extension de l'inflammation pulpaire.

TABLEAU 2 L'hémogramme du sang pulpaire local normal (série blanche).

Ingrédient	Nombre
polymorphonucléaires	
leucocytes	7000
neutrophiles (en segmentation)	55-65
neutrophiles (non segmentés)	5-10
éosinophiles	2-4
basophiles	1/2 - 1/3
monocytes	6-8
lymphocytes	20-25

TABLEAU 3 Enumération des prélevés de sang pendant la trépanation.

Diagnostic histo-pathologique	neutrophiles		éosino- philes %	baso- philes %	mono- cytes %	lympho- cytes %	infection de la pulpe
	segmentés %	non seg- mentés %					
Pulpite séreuse partielle	47	3	2	—	8	36	—
Pulpite aiguë partielle	49	11	3	—	6	30	—
Idem	55	1	—	—	12	32	—
Pulpite purulente partielle	65	1	—	—	9	25	—
Idem	71	2	—	—	8	18	—
Pulpite aiguë totale	68	5	—	—	6	20	—
Idem	81	1	1	—	2	15	—

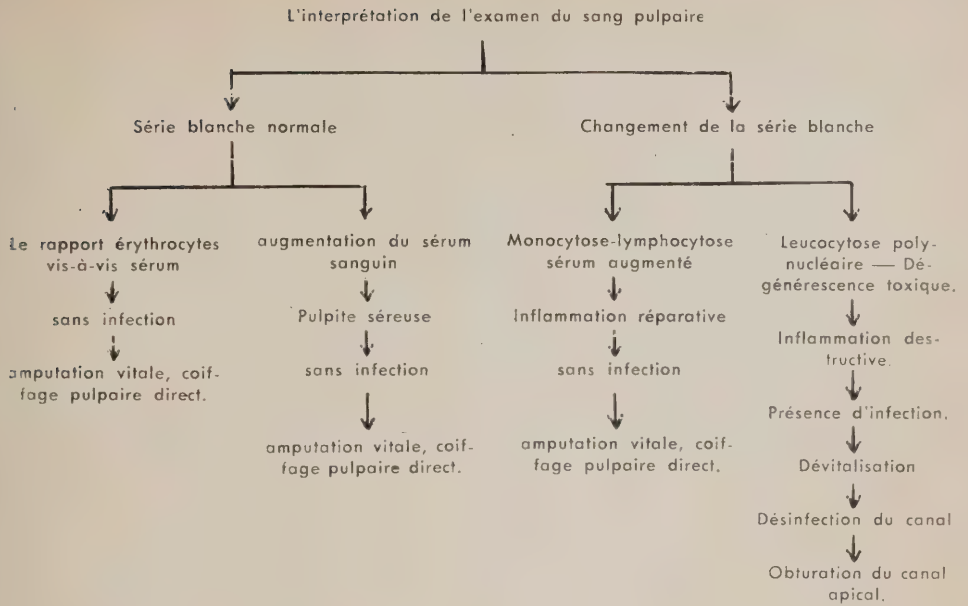


FIGURE 1 Tableau de l'interprétation de l'examen du sang pulpaire.

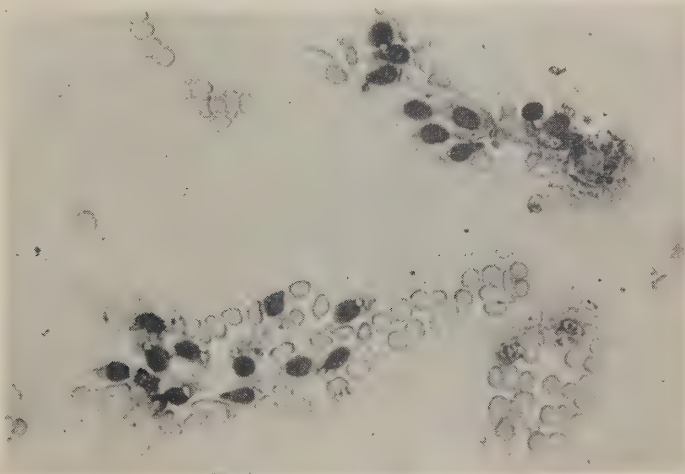


FIGURE 2 (object. 25 Leitz) Des cellules pulpaires se trouvent parfois dans le frottis du sang pulpaire.

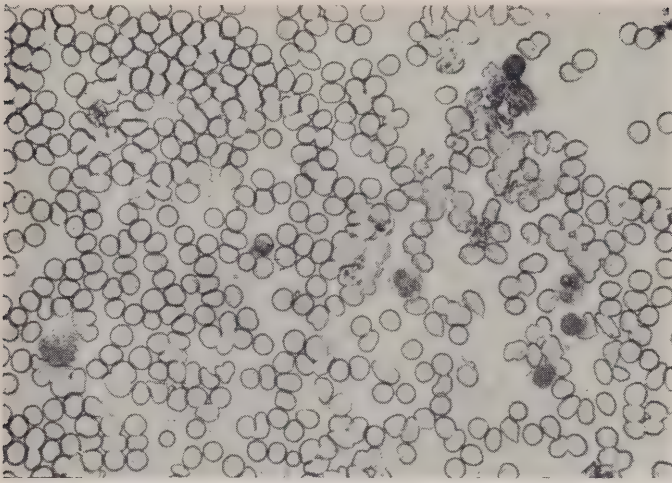


FIGURE 3 (object. 25 Leitz) Microphotographie d'un frottis pulpaire: globules rouges, quelques globules blancs (polymorphonucléaires, lymphocytes et macrophages).

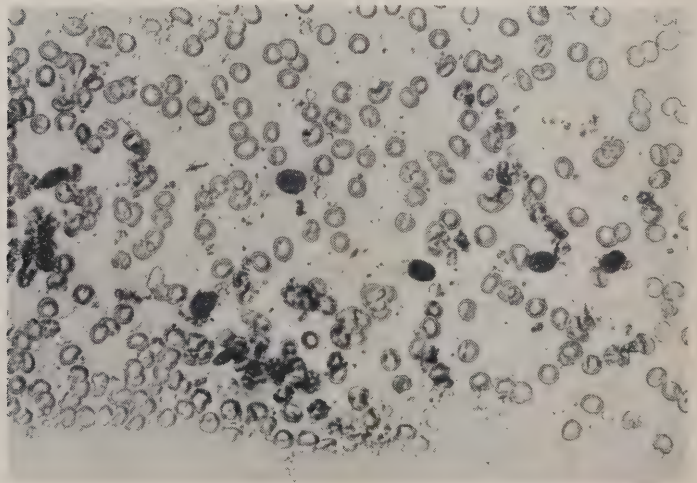


FIGURE 4 (object. 25 Leitz) Augmentation du nombre des globules blancs par rapport à celui des globules rouges. La prédominance des mononucléaires est un signe d'une pulpite toxique.

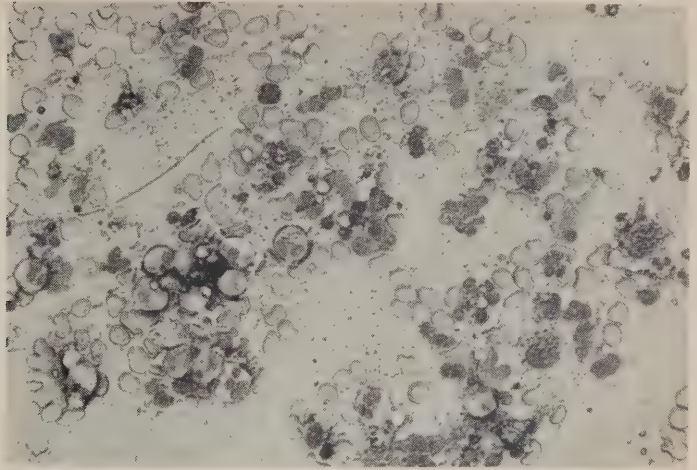


FIGURE 5 (object. 25 Leitz) Augmentation du nombre des globules blancs par rapport aux globules rouges. Présence de macrophages et de leucocytes polymorphonucléaires dont certains présentent des signes de dégénérescence.

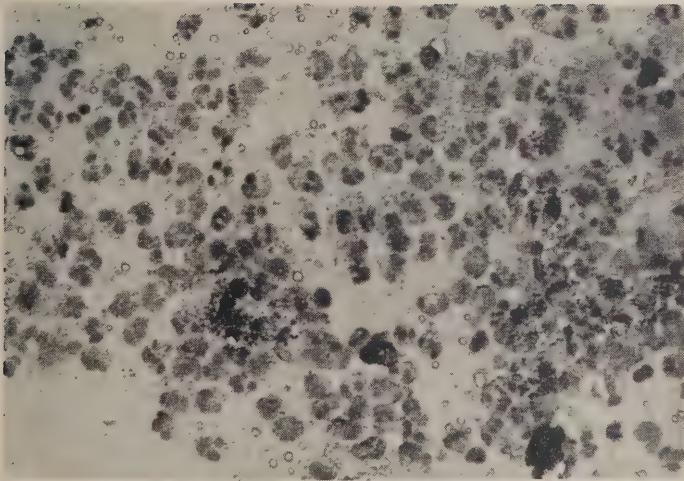


FIGURE 6 (object. 25 Leitz) Frottis pulpaire avec caractéristiques purulentes. Absence de globules rouges. Leucocytes polymorphonucléaires au stade varié de dégénérescence.

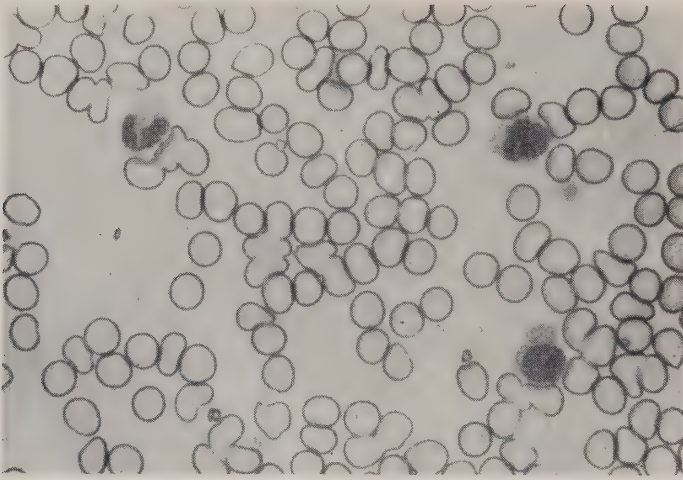


FIGURE 7 (object. 40 Leitz apochromatique) Aspect d'une pulpite toxique (évidence de mononucléaires).

CONCLUSIONS

Nous appliquons, depuis une année, à l'Université de Montréal, cette nouvelle technique de Prader, c.-à-d. un examen du sang pulpaire pour préciser le diagnostic des pathologies qui s'y trouvent.

—Cette méthode a une valeur incontestable pour le diagnostic de l'état pathologique de la pulpe au moment d'exécuter la trépanation pulpaire.

—Elle possède aussi une valeur au point de vue orientation du traitement des pulpites toxiques et infectieuses.

—Il faut néanmoins souligner qu'elle ne doit pas constituer la seule méthode valable de diagnostic; il faut aussi accorder leur place aux tests électriques, thermiques et bactériologiques qui s'avèrent une arme précieuse dans notre arsenal de moyens de diagnostic.

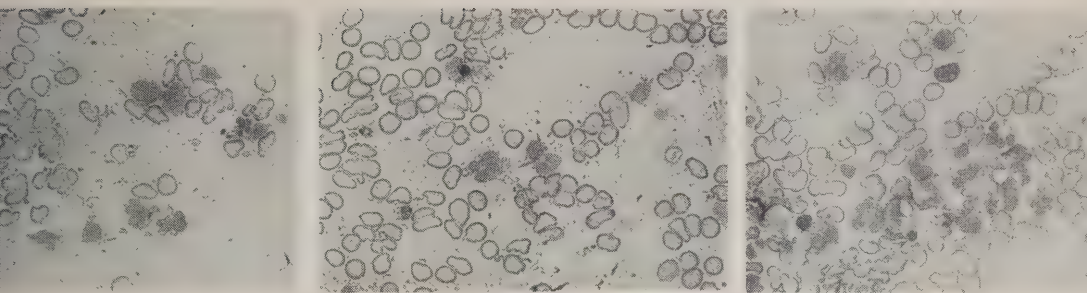
—Le grand avantage de l'examen du sang, au moment de la trépanation, est le facteur temps, car il fournit une réponse quasi immédiate (en dedans de

quinze minutes) et précise le diagnostic et nous rassure dans l'orientation du traitement clinique.

Voici le commentaire de A. Marmasse³ sur la valeur de la méthode Prader: "La technique de Prader est encore du domaine du laboratoire; elle représente la rigueur scientifique et ses indications ne sont pas actuellement superposables aux constatations cliniques, à la symptomatologie. Il y a là cependant un procédé qui n'est ni long, ni difficile à employer et nous voudrions le voir vulgarisé. Il devrait s'opposer efficacement aux échecs de traitement qui n'ont d'autre cause qu'une connaissance imparfaite de la lésion qu'on traite".

SUMMARY

The author describes a method whereby the pathological condition of the pulp can be ascertained with precision and accuracy. This method consists in making a blood count of the first drop of blood taken from an exposed pulp. The number



FIGURES 8, 9, 10 (object. 40 Leitz apochromatique) Abondance de leucocytes polymorphonucléaires à différents stades de dégénérescence. Les figures 7 et 8 montrent de nombreux microorganismes (phagocytose). Certains microorganismes se trouvent à l'intérieur des leucocytes.

of white cells determines the course of treatment: capping, pulpotomy, total extirpation of the pulp tissue with or without sterilisation of the canal. This technique is very practical and can be accomplished in the office within fifteen minutes; it does not displace the usual means of diagnosis for pulp diseases, such as thermal, vitalometric or radiographic examinations, but it helps the dentist to

perform his treatments with more knowledge and security.

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2. Guthrie, T. J. Dental pulp hemogram—diagnostic aid in vital pulp therapy. J. D. Res. 39:708, juillet-août 1960.
3. Marmasse, A. Dentisterie opératoire, Tome 1, Dentisterie thérapeutique. Paris, J. B. Baillière et fils, 1958.

4001 Lacombe

Tests de susceptibilité à la carie

par ANDRÉ BRUNELLE,* e.e.c.d., Montréal, P.Qué.

Quiconque s'intéresse de près aux diverses conditions pathologiques de la cavité buccale, et en particulier à la carie dentaire, remarquera que l'activité de la

carie n'est pas la même d'un individu à l'autre. Certains auront quelques dents ou pas du tout atteintes de carie, tandis que d'autres auront presque toutes leurs dents atteintes. L'indice D.M.F. peut donner une idée de l'état de la bouche du patient. Il résume les ravages faits par la carie:

*Université de Montréal

il comprend les dents atteintes de carie, les dents extraites et les dents obturées. Il a été démontré qu'il existe une susceptibilité marquée à la carie dentaire chez certains individus; celle-ci pourrait être définie comme étant une prédisposition naturelle ou constitutionnelle chez certaines gens à faciliter l'élaboration du processus de la carie. Plusieurs théories ont été énoncées quant au mécanisme de la carie. Celle qui groupe le plus grand nombre d'adeptes semble être la théorie chimico-parasitaire de Miller. Avant toute trace d'activité de carie sur une dent, on peut y observer par coloration la présence d'une plaque très adhérente à la surface de l'émail, dite plaque bactérienne; son examen microscopique révèle la présence de bactéries nombreuses, entre autres, le lactobacille acidophile et le staphylocoque. Or, selon Miller, en présence de ces bactéries, les aliments, en particulier, les hydrates de carbone sont transformés en acides organiques dans la plaque bactérienne et ces acides seraient responsables de la faille ou brèche initiale dans la structure de l'émail. Donc susceptibilité à la carie impliquerait, selon cette théorie, tendance à faciliter la production d'acides organiques d'où la destruction marquée de l'émail des dents, phase initiale de la carie.

Entre l'état de résistance totale et l'état de susceptibilité totale il existe divers degrés de l'étendue des dommages causés par la carie. Certains facteurs peuvent intervenir pour corriger ou aggraver cette susceptibilité naturelle. D'abord ce sont des facteurs généraux, d'ordre constitutionnel, comme des troubles endocriniens, des intoxications, des infections ou même un état psychique qui peuvent intervenir dans l'étiologie de la carie et précipiter la marche du processus. On observera cliniquement chez ces cas de nombreuses caries à évolution très rapide. L'alimentation joue un rôle très important dans le maintien d'un bon état général de l'organisme; de plus, par son action locale, c'est-à-dire sa teneur en hydrates de carbone, elle contribue avec d'autres facteurs locaux, tels la présence

de microorganisme et l'hygiène buccale, à modifier la sévérité de la carie. Mais malgré ces données, il n'en reste pas moins vrai que certains individus soumis à certaines conditions identiques, telles qu'hygiène et alimentation, sont les uns résistants et les autres susceptibles à la carie dentaire.¹

Nous nous proposons donc de discuter de certains moyens dits tests de susceptibilité qui pourraient révéler si un individu est résistant ou susceptible à la carie. En général, pour que ces tests soient d'un intérêt particulier, on doit respecter, selon un grand chercheur dans le domaine, le Dr Snyder, certains critères: le test devrait avoir une corrélation maximale avec les données cliniques. Il devrait être reproduit avec un très haut degré de précision, s'exécuter rapidement et être simple d'exécution. Il devrait exiger un minimum d'équipement et d'expérience et devrait être peu dispendieux. Les tests les plus employés sont le comptage des lactobacilles, les tests colorimétriques, celui de Snyder et le test au rouge méthyle, le test de solubilité de l'émail, les tests de l'amylase salivaire et du pouvoir tampon de la salive et enfin le test du flot salivaire.

Celui qui est le plus fréquemment utilisé est le comptage des lactobacilles. Son application est basée sur le fait que les hydrates de carbone sont transformés dans la cavité buccale en acides organiques sous l'action enzymatique des bactéries. Parmi ces bactéries, les lactobacilles ont été reconnus comme agents principaux dans la dite transformation; d'où leur nom de lactobacilles acidophiles. Or le comptage des lactobacilles dans la salive d'un individu révèle la présence plus ou moins accentuée de ces derniers et détermine ainsi si cet individu est sujet à la carie, si les nombreuses caries trouvées en bouche ont pour étiologie les lactobacilles. La technique de ce test est assez complexe. Il s'agit en premier lieu de faire la collection d'un échantillon de salive chez le patient concerné. Le patient doit recueillir sa salive dans un vase, le matin alors qu'il est à jeûn,

après avoir mâché un morceau de parafine pour stimuler la sécrétion salivaire. L'ensemencement des cultures se fait ordinairement sur milieu gélose-sang ou bien sur milieu sérum-agar sous conditions anaérobiques et en présence de bioxyde de carbone tel qu'employé par Rodriguez,² ou bien encore dans un bouillon glucosé. Après passage à l'étuve, on peut procéder au comptage des colonies de lactobacilles. La précision du résultat de ce test est en général moyenne, à cause de la présence toujours possible d'autres facteurs influençant l'activité de la carie. Selon Bunting et Palmerlee qui ont fait des recherches intenses sur ce test, les résultats suivants ont été obtenus: "Il y a fréquence diminuée de l'occurrence des lactobacilles acidophiles chez les groupes d'individus sans carie; il y a différences qualitatives dans les types de lactobacilles isolés; la fréquence de localisation, sur la surface des dents, de lactobacilles est basse chez les individus sans carie; enfin, il y a présence d'un type de microorganismes chez les groupes sans carie qui est rarement rencontré chez les groupes dits susceptibles." Quant aux résultats de Rodriguez, on peut les résumer ainsi: il a pu déterminer quantitativement l'incidence des bactéries formant des acides dans la cavité et il a pu différencier ces colonies de celles des autres bactéries de la bouche par une réaction spécifique sur le contenu du milieu sérum-agar. Par contre, les résultats obtenus par Blayney sont moins persuasifs quant à la précision obtenue. Sur 84 spécimens de salive recueillis, 75% étaient positifs, alors que ces 84 individus étaient classés comme étant sans carie. Sur 1,091 patients portant des appareils de prothèse complète, 82% ont montré la présence de lactobacilles. Blayney conclut donc "que ces données semblent être indépendantes du fait que le patient ait été classé auparavant comme ayant des caries actives ou comme étant sans carie." D'autres chercheurs, tel Boyd, ont souligné que l'hygiène buccale de l'individu a une grande influence sur le nombre des lactobacilles présents en

bouche. Il faudrait se rappeler que, le prélèvement étant fait au lever du patient, il est peu probable que les microorganismes ne se soient multipliés à un rythme normal durant le sommeil, même si l'individu est soucieux de la propreté de sa bouche. Il diminue certainement la formation d'acides organiques vu l'élimination des débris alimentaires presque totale. Snyder semble avoir trouvé la solution désirée quant à l'importance des données au comptage des lactobacilles. "Quand les conditions sont rencontrées, dit-il, le comptage des lactobacilles donne un index en relation avec l'activité des caries et est un pronostic raisonnable." L'importance qu'il donne aux conditions dans lesquelles est fait le comptage est tout à fait justifiée. En effet les sources d'erreurs les plus communes dans ce test sont: (1) la contamination quand la paraffine est mâchée et quand la salive stimulée est déposée dans une bouteille; (2) l'espace de temps entre le réveil de l'individu et la collection de la salive et en faisant les comptages sur plaques à partir de ces fluides salivaires; (3) quand le diagnostic est basé sur un seul comptage sur plaque des lactobacilles. Ces critères étant respectés, le comptage des lactobacilles reste un test d'une corrélation clinique excellente. Sa précision demeure cependant moyenne: le test requiert un temps relativement long et est assez complet: il nécessite un équipement élaboré et en conséquence est assez dispendieux.

Les tests colorimétriques ont pour base la théorie par laquelle la carie est produite par un mécanisme acidogène, laquelle théorie n'est pas universellement acceptée encore. Parmi les diverses techniques employées, deux semblent être très utiles dans le dépistage de la susceptibilité à la carie. En premier lieu, une méthode préconisée par Snyder consiste à démontrer, par un changement d'intensité de couleur d'un indicateur bromocrésol, le résultat de la production d'acides par les bactéries orales dans un milieu de culture choisie. Un prélèvement

salivaire ayant été fait, il s'agit d'y ajouter l'indicateur bromcrésol qui en milieu acide prendra une teinte verte. On a pu ainsi déterminer, qu'après 24 heures, une coloration positive indiquait l'activité de lactobacilles tandis, qu'après 48 heures seulement, elle indiquait l'activité des staphylocoques. D'après Snyder,³ "ces données indiquent, pour la majeure partie, que les réactions de couleur positive de 24 à 48 heures sont essentiellement dépendantes de la présence des lactobacilles dans la salive."

Une seconde méthode, celle du test au rouge méthyle, est d'application plus récente et repose sur la même théorie que celle de la méthode Snyder. La technique fort simple consiste à appliquer sur les dents du patient un colorant, en l'occurrence le rouge méthyle, qui indiquera selon sa teinte la formation d'acide sur la surface de l'émail. Un chercheur britannique, J. L. Hardwick,⁴ mit ce test à l'épreuve et ses résultats purent être interprétés de la façon suivante: (1) après le rinçage au glucose, la couleur du rouge méthyle qui indique le site où une lésion est susceptible de se développer sur la dent, était d'un rouge pur ou d'un rouge avec une légère trace orangée, correspondant au pH 5.2 environ ou inférieur. Aucune lésion ne s'est développée subséquemment dans les régions où il y avait seulement une teinte rouge-orangée. (2) Aucune prédiction ne peut être faite sur les dents en éruption jusqu'à ce que celles-ci ne viennent en occlusion fonctionnelle avec leurs antagonistes. (3) Dans les fissures recouvertes de films dont la surface était relativement épaisse, on déplaça la surface du film après avoir rincé la bouche au glucose de façon à distinguer la couleur de l'indicateur près de la surface de la dent de celle de la surface externe du film. Avant cette précaution, plusieurs prédictions furent faites sans précision.

Pour mettre en valeur l'efficacité de ce test, rappelons quelques chiffres donnés au cours d'applications cliniques faites par Hardwick. Il entreprit 250 examens durant les trois dernières an-

nées. Ces mêmes patients furent ré-examinés un an après l'application du test: à l'aide de ce dernier, on avait prédit que 463 cavités se développeraient et en réalité 598 nouvelles cavités se développèrent. Parmi les 463 régions prédites comme cavités susceptibles au premier examen, on estima que 263 d'entre elles (environ 59%) étaient cariées au second examen. L'évidence clinique consistait donc de lésions de caries initiales s'étant développées au site exact prédit par le test. Des 598 cavités nouvelles, 263 (environ 44%) comprenaient des régions où on avait prédit le développement de caries.

Le test au rouge méthyle ne peut indiquer l'effet de la structure de dents résistantes à la carie sur la susceptibilité à la carie. Le test n'est pas applicable pour comparer la susceptibilité de différents sujets, mais il indique habituellement les changements de la susceptibilité à la carie chez un patient à différentes périodes de temps et a une grande valeur quant aux mesures préventives à prendre, basées sur le contrôle de l'acidité de la surface de la dent. Ce test enfin est rapide et facile à exécuter: il ne demande aucune facilité élaborée de laboratoire et les résultats sont vite connus.

D'autres tests suggérés dans ce but ont été abandonnés pour diverses raisons: les uns manquent de corrélation clinique, les autres demandent un temps d'exécution trop long ou bien requièrent un équipement complexe et un personnel entraîné pour l'accomplir. Le test de la solubilité de l'émail, pratiqué en particulier par Fordick, est basé sur le fait que les acides organiques, formés à partir des carbohydrates, décalcifient l'émail des dents, par conséquent libèrent le calcium dans la salive. La mesure de la quantité de calcium trouvée dans la salive indiquera donc le pouvoir solvant de la salive sur l'émail en présence de carbohydrates. D'une façon générale, Fosdick conclut que les données du test indiquent que la salive de tous les individus contient un matériel sensible qui cause la production d'acides à partir de sucres et

Classement des tests de susceptibilité à la carie dentaire.

Tests de susceptibilité	Corrélation clinique	Précision	Temps requis	Simple	Equipement	Personnel	Coût
Comptage des lacto-bacilles	Excellente 80-90 %	Moyenne	4 jours	Non	Complexe	Entraînement bactériologique	Elevé
Solubilité de l'émail	Excellente 85 - 90 %	Excellente	4 heures	Oui	Simple	Non spécial	Bas
Test de l'amylase	Pas déterminée définitivement	Bonne	10 minutes	Oui	Simple	Non spécial	Bas
Test colorimétrique (Snyder)	Excellente 90 %	Bonne	24-48 hres	Oui	Simple	Non spécial	Bas
Pouvoir de combinaison du CO ₂	Pas déterminée satisfaisante	Moyenne	24 heures	Non	Complexe	Entraînement en chimie	Elevé
Flot salivaire	Pas déterminée satisfaisante	Pas déterminée	1 heure	Oui	Simple	Non spécial	Bas

alors décalcifiera l'émail humain. Le travail indique aussi, selon lui, que ce même matériel est présent en concentrations différentes dans la salive de gens dits immunisés ou susceptibles, tel que déterminé par le taux auquel l'émail sera décalcifié. Ce matériel trouvé dans la salive, ajoute-t-il, pourra être soit des bactéries ou soit des types d'enzymes. Ce test est le plus praticable parmi ceux que nous considérons dans ce groupe. En effet, il a une corrélation clinique excellente: il varie en 85 et 90% en succès. La précision du test est aussi excellente et son exécution qui est simple requiert 4 heures. Il demande peu d'équipement, aucun entraînement spécial et il est peu coûteux.

Le test de l'amylase salivaire a pour base la théorie selon laquelle il y a relation entre l'activité de la carie et l'activité de l'amylase salivaire, enzyme qui a pour fonction de dissoudre les carbohydrates. Sa technique est fort simple: l'amidon mis en présence d'iode donne un complexe coloré: la disparition du complexe coloré est fonction du degré d'hydrolyse enzymatique du substrat amidon par l'amylase. Donc on a déduit que les personnes susceptibles à la carie ont une salive qui hydrolyse l'amidon

plus rapidement que la salive de personnes immunisées contre la carie, d'où désintégration plus rapide des carbohydrates en acides organiques et par conséquent susceptibilité accrue à la carie. La corrélation clinique de ce test n'est cependant pas encore déterminée définitivement. Son exécution est fort simple et ne prend que 10 minutes. Selon Snyder, cette procédure approche étroitement de l'idéal, sauf le fait qu'il n'y ait pas d'accord entre les chercheurs au sujet de sa valeur comme index d'activité de la carie.

Il existe deux autres tests qui furent pratiqués pour amener plus de précision sur la susceptibilité à la carie dentaire. Le premier, le test du pouvoir de combinaison du CO₂ démontre, théoriquement du moins, que le pouvoir tampon salivaire est plus grand chez les gens ayant peu de caries que chez ceux y étant susceptibles. On dit théoriquement parce que pratiquement il est très difficile de la démontrer à cause de l'impossibilité presque absolue de réaliser une analyse chimique parfaite de la salive. C'est pourquoi l'efficacité de ce test est très douteuse. Le second test qui recherche l'influence de l'abondance du flot salivaire sur l'incidence de la carie a été

pratiqué par Tremblé mais sans résultat précis, semble-t-il. On a cependant pu affirmer que la diminution du flot salivaire était suivie d'une augmentation de l'incidence de la carie. Il demeure certain que ce dernier test n'a pas de précision reconnue, ni de corrélation clinique satisfaisante: il serait donc peu sage de tirer des conclusions sur les observations faites d'après son application.

Il est à remarquer qu'il existe d'autres tests relatifs à la susceptibilité à la carie et que nous n'avons qu'effleuré ici quelques-uns d'entre eux. De nombreuses écoles dentaires américaines, telle celle du Michigan, font d'intenses recherches dans ce domaine en vue d'apporter de nouvelles précisions aux tests déjà connus. Que devrait être l'attitude du praticien vis-à-vis ces différents tests disponibles? Le praticien soucieux de la santé buccale de ses patients se rappellera que ces tests lui indiquent, par leurs résultats, les mesures préventives à prendre pour enrayer l'activité néfaste de la carie. Cependant le choix judicieux du test est de la plus haute importance; le choix sera guidé par les conditions

rencontrées en bouche, après un examen soigneux. De cette façon, le praticien aura la satisfaction d'avoir rendu un immense service à son patient et d'avoir accompli consciencieusement ses devoirs professionnels.

SUMMARY

The author reviews a variety of tests used to determine caries susceptibility. He classifies them on the basis of the following criteria: precision as compared to clinical findings, time required for the conduct of each test, relative simplicity, equipment required, skill and training required, and the relative cost.

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2900 blvd du Mount-Royal

Congrès de

L'ASSOCIATION DENTAIRE CANADIENNE

et de

L'ASSOCIATION DENTAIRE DE LA COLOMBIE-BRITANNIQUE

du 3 au 6 juin, 1962

au Théâtre Reine Elizabeth, Vancouver, Colombie-britannique

LES ACTUALITES DENTAIRES

L'Association

LE PRESIDENT A FAIT UNE TOURNEE DES PROVINCES DE L'EST

Le docteur William Miller, de Vancouver, président de l'A.D.C., a rendu visite, à la fin de novembre, à plusieurs sociétés dentaires de l'est du Canada. Il était accompagné du docteur Don W. Gullett, secrétaire de l'Association dentaire canadienne. Le président a pris la parole à Montréal, le 27 novembre; à St-Jean, N.-B., le 28; à Charlottetown, le 29; et à Halifax, le 30. Le docteur Miller et le docteur Gullett ont passé deux jours à St-Jean, Terre-Neuve, pour arrêter, au cours de leur retour à Québec, le 4 décembre. Ils ont aussi rendu visite aux étudiants de l'Université de Montréal, de McGill et de Dalhousie.

Immédiatement avant son départ pour l'est du pays, le président a représenté l'Association au congrès de l'Association dentaire mexicaine, à Mexico.

COPIE DE LA CONSTITUTION ET DES REGLEMENTS

Le secrétariat de l'Association a encore en sa possession quelques-uns de ces fascicules contenant la nouvelle constitution et les nouveaux règlements de l'Association dentaire canadienne. L'assemblée du Conseil des Gouverneurs de 1960 a consacré beaucoup de travail à ces règlements, qui furent inclus dans les Délibérations 1960. Le nouveau fascicule renferme aussi les amendements adoptés en 1961.

REUNION DU CONSEIL D'HYGIENE DENTAIRE PUBLIQUE

Le conseil d'hygiène dentaire publique de l'Association dentaire canadienne a tenu son assemblée annuelle au secrétariat, les 25 et 26 janvier. Le président du conseil est le docteur Frank McCombie, de Victoria, C.-B. Les membres en sont: les docteurs B. J. O'Meara, de Charlottetown, I.-du-P.-E.; C. A. E. McCabe, de Montréal; Marjorie Jackson, de Toronto; et A. R. S. Grey, de Lethbridge. D'autres personnes intéressées dans l'hygiène dentaire publique ont été invitées à cette assemblée.

BOURSES D'ETUDES DE L'A.D.C. POUR LES RECHERCHES

L'Association dentaire canadienne, depuis qu'elle a institué un système de bourses pour des recherches, en 1947, a aidé 24 étudiants diplômés à se créer des postes dans l'enseignement ou les recherches.

Dix-huit de ces boursiers font partie ou ont fait partie du personnel enseignant des facultés dentaires canadiennes et deux sont encore aux études.

En 1955, ce système de bourses a été amplifié pour aider des étudiants à travailler à des recherches durant leurs vacances d'été. Vingt-neuf subventions ont ainsi été données à des étudiants. Cinq d'entre eux enseignent maintenant dans des facultés et 10 sont encore aux études. Ci-après, une liste de ces subventions.

Compilation des bourses d'études de l'Association dentaire canadienne pour les recherches.

année	diplômés \$	étudiants \$	frais de voyage, etc. \$	Total \$
1948	1,400 (2) *			1,400
1949	2,269 (4)			2,269
1950	2,300 (3)			2,300
1951	3,800 (3)		281	4,081
1952	1,700 (2)			1,700
1953	1,200 (1)		100	1,300
1954	3,660 (3)		455	4,115
1955	2,100 (2)	1,000 (1)		3,100
1956	5,620 (3)	400 (1)		6,020
1957	5,661 (3)	950 (3)	950	7,561
1958	12,385 (6)	4,513 (5)	1,170	18,068
1959	3,900 (2)	3,195 (4)		7,095
1960	2,500 (1)	5,375 (7)	200	8,075
1961	4,040 (2)	6,900 (8)	500	11,440
TOTAL				78,524

*Le chiffre entre parenthèses indique le nombre des bourses.

37 bourses à 24 diplômés; de ceux-ci, 18 ont été ou sont dans l'enseignement dans des facultés dentaires canadiennes et deux sont encore aux études.

29 bourses à des étudiants, dont cinq font maintenant partie du personnel enseignant de facultés dentaires canadiennes et dix sont encore aux études.

Le Canada

LA COMMISSION ROYALE TIENT DES ASSISES PUBLIQUES

La Commission royale d'enquête sur les services de santé tient des séances publiques dans l'est du Canada. Elle a siégé aux endroits suivants:

le 30 oct. et le 1er nov. — Halifax
les 2, 3, 4 nov. — St-Jean
les 7, 8 nov. — Fredericton
les 9, 10, 11 nov. — Charlottetown

Le comité de direction du mémoire de l'Association dentaire canadienne a demandé que le secrétaire assiste, si possible, à toutes ces séances publiques. Des engagements pris antérieurement ne lui permettent pas d'assister à chacune d'elles. Les organismes dentaires des provinces y étaient représentés et ont soumis des mémoires traitant de problèmes provinciaux.

Des séances se tiendront dans l'ouest du pays au début de la nouvelle année. Le secrétariat est à élaborer le mémoire que l'Association présentera plus tard.

NOUVELLE REGLEMENTATION POUR LES DROGUES

On a fait parvenir à tous les dentistes du Canada la nouvelle réglementation au sujet de certaines drogues régies par la loi des aliments et des drogues. Le docteur C. A. Morrell, de la division des aliments et des drogues du Ministère de la santé nationale et du bien-être social d'Ottawa, a fourni, dans une lettre circulaire à la profession dentaire, les détails de ces règlements.

Les dentistes sont priés de lire attentivement ces nouveaux renseignements.

VERIFICATION DE L'IMPOT SUR LE REVENU

Le *Financial Post* annonce que le Ministère du revenu national se propose bientôt des vérifications sévères des rapports d'impôt de ceux qui fraudent la loi.

Les investigateurs et les comptables ont commencé à accélérer leurs vérifications des rapports de 1960 et des années précédentes.

Le *Financial Post*, croit que les professionnels, y compris les dentistes, seront l'objet d'enquêtes sérieuses et d'interrogatoires détaillés au cours des mois qui viennent.

Les dentistes et les autres professionnels indépendants sont les personnes toutes désignées aux recherches du fisc, parce qu'ils jouissent de privilèges particuliers qui ne sont pas accordés aux salariés et parce que leurs transactions s'effectuent sur une base de comptant.

FOIRE SCIENTIFIQUE NATIONALE

La première foire scientifique nationale aura lieu à Ottawa, dans l'édifice des sciences de l'Université Carleton, les 1, et 2 mai 1962. Cette foire est patronisée par le Club Kiwanis d'Ottawa et le Conseil canadien des foires scientifiques.

Au cours de la dernière année académique, il y a eu plus de 30 foires scientifiques organisées au Canada. Le Conseil invite les professeurs, les organismes sociaux, les associations professionnelles et les industries à organiser de ces foires dans les écoles et dans certaines localités.

On peut obtenir des renseignements en s'adressant au Conseil, qui a son siège social à 48, rue Rideau, Ottawa.

Les gagnants des foires régionales concourront pour les prix d'importance nationale à cette foire qui est organisée pour la première fois pour tout le Canada. Les plus belles réalisations recevront des témoignages des associations scientifiques, professionnelles et éducationnelles qui patronisent le Conseil. L'Association dentaire canadienne est un des patrons de ces foires scientifiques.

LES CHERCHEURS CANADIENS EN CHIRURGIE DENTAIRE SE REUNISSENT

La première conférence canadienne sur la recherche dentaire s'est avérée un immense succès. Ceux qui y ont pris part ont exprimé le vœu que ces réunions se répètent régulièrement à l'avenir.

Cette conférence s'est tenue dans le nouvel édifice de la faculté dentaire de l'Université de Toronto, les 30 et 31 octobre; elle était organisée sous les auspices de la Fondation canadienne des recherches dentaires et de l'Association dentaire canadienne, avec le support financier de la Cie Procter & Gamble du Canada.

Des chercheurs des six facultés dentaires canadiennes et du Corps Royal Dentaire Canadien ont présenté une vingtaine de communications. Des résumés de ces conférences seront probablement publiés dans le *Journal de l'Association dentaire canadienne*.

Les délégués ont été reçus à dîner le 30 octobre, où M. Alex Hill, ancien président de la Fondation nationale du cœur, dans un discours, leur a proposé des idées propres à éveiller chez eux beaucoup de réflexion.

Le conseil des recherches de l'A.D.C., après la réunion, s'est assemblé au secrétariat de l'Association. On y a formé un comité spécial formé des docteurs J. D. Spouge, de Winnipeg, K. J. Paynter, de Toronto et K. A. McMurphy (président), d'Edmonton, pour étudier la possibilité de former une association canadienne des recherches en chirurgie dentaire.

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Child Management in the Dental Office

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From time immemorial the programs of most dental conventions featured a clinic on "child management." This subject appeared so often and the clinician built it up with such enthusiasm that frequently a molehill was built into a mountain. With respect to methodology in this field we seem to have run the whole gamut. We have featured the Cook's tour of the office, the rides up and down in the dental chair, the establishment of birthday and "I can take it" clubs, the sending of

Christmas cards, to say nothing of the giving of gifts and gadgets. Yes, and there were some like myself who expected the busy practitioner to take a course in sleight of hand.

It has been said, and with some truth, that these methods recommended by the so-called specialists in this field tended to frighten the sincere general practitioner from working with children rather than to help him conquer his own fears with respect to the business of dealing with the young child.

After the busy practitioner had tried out one or all of the above recommended

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approaches, usually with little success, he was likely to contemplate the mountain of work facing him and feel that he had been "fiddling while Rome was burning."

These methods were time-consuming, not particularly helpful to the child in adjusting nor to the dentist in managing him. But in the long run, little harm was done. This could not be said, however, of a new era that is emerging. This is what one might term the "Pill Age." A normal, healthy child, it appears, has only to show the slightest sign of non-co-operation and heavy sedation or general anaesthesia will be suggested to the parent. Seeing graduates leaning on such crutches is most disappointing to the teacher who has watched them as undergraduates performing very difficult tasks on young children without such aids and, in performing them, learning to manage the children and to help them at the same time to adjust to these new experiences. Now let us consider methods based on sound psychological principles which are practical enough to allow a dentist to make an adequate living but which will enable him to do a job in a field where the need is very great.

It should be recognized that fear in a young child can be induced by coming in contact with the unknown, by some sudden loud sound, or by experiencing sudden loss of support.¹ Let us first deal with fear of the unknown. A child taken from a home where things and persons are familiar and introduced into an environment as foreign to him as a dental office, would naturally show concern. Thus the closer the dental waiting room can resemble that of a home living room, the better. It should also be remembered that young children cling very closely to the mother, and if it is necessary to dismiss the mother, it should be a gradual process, rather than one of sudden separation. An effort to soften the procedure should be made by allowing the mother to stay with the child until a new person in the picture can become reasonably familiar to him. When this time arrives, the parent can be removed from the scene

with little disquiet to her or to the child. If one attempts to separate the child and mother in the waiting room on the first visit, he will undoubtedly antagonize the parent, and in most, if not all instances, turn a good dental patient into a poor one. When one fails to invite the parent of a young, or, in fact, any age child into the operating room on the first appointment, he is missing the best opportunity which one can obtain for studying parent-child relationship. Invite the parent into the operating room, and observe closely all remarks of the mother and their effect on the child. A child, brought up in a well disciplined home, will respond well to the parent's requests without any signs of apprehension and the dentist will have a co-operative patient. Often, however, you will hear such remarks as, "Look, Jimmy, it is just like the barber's chair"; "The doctor is going to give you rides up and down in the chair"; or "Daddy is going to promise you this or that." This parent avoids talking about the real purpose of the visit, namely, the examination of the child's teeth. If the dentist for a while busies himself with scrubbing his hands, he can learn a great deal. In fact, the length of time he takes to scrub his hands is exactly proportional to the success he will have in managing both parent and child. In other words, let the mother see that she has failed and then step in with a voice of authority. Speaking of authority, it must be remembered that when a small child learns the full meaning of "no," he interprets it as a blocking of his will and immediately becomes unfriendly.² The parent may be one who deals with this by shaking or slapping one time, and by hugging or cuddling the next. The child under such circumstances becomes confused and develops lack of security with a tendency to distrust anyone. The dentist under such conditions must demonstrate a calm, firm attitude with both parent and child. This will calm the child, while shouting and scolding will increase his fears. Ask the mother to place the child in the chair. By doing so, you help both her and the child to gain control of them-

selves. If, however, the mother by her attitude has failed miserably, then ask her to stand behind the chair while you proceed to get command of the situation by telling, not asking, the child to get up in the chair. If the child refuses, proceed with that same firm attitude to place him in the chair and to commence examination of the mouth. The child will in all probability start grabbing the hands. Throw aside the hands and continue in a nonchalant manner to carry out the procedure intended. You will find the mother will continue to bombard the child with a "will you, won't you, can't I coax you?" kind of attitude. This is the time to turn the child over to your assistant and with that same calm firm attitude used on the child, tell the parent to go to the waiting room. In all probability, she will first refuse. If she does, remind her that, when she takes the child to kindergarten the first day, she won't be allowed to sit in the seat with him. The school authorities will not allow this, and furthermore it would be entirely impossible for a teacher to help forty children to adjust to the school environment with forty parents present. If she still fails to co-operate, one might remind her that it is not because the hospitals cannot supply her with a sterile gown that they will prevent her from entering the operating room, but because her child will be better off without her. If the mother still insists on remaining with the child, she should perhaps be asked to find another dentist. Let us suppose, on the other hand, that you have separated the mother from the child in the waiting room. She will not have had the opportunity to fail with the child herself and to experience the child's obstreperous reaction. Everything would be blamed on you. At every club in the neighbourhood it would be said that you had ruined her child for all time.

Young children are often frightened by sudden loss of support. The simple act of lowering or tilting the chair without warning may upset some young children to the point where they will become hysterical. A sudden loud sound can act in a

similar manner to sudden loss of support. While it is not wise to show the child every object in the operating room and explain all the whys and wherefores, it is considered good procedure to pick out something as strange as a dental drill and explain why it makes a noise and introduce it to the child in a way that will accustom him to it. The simple application of a rubber prophylactic cup to a tooth might help to eliminate any apprehension the child may have toward this strange object. The explanation, whatever it may be, must be short and to the point. It should be remembered that over-conditioning often arouses suspicion.

Dentists would seldom fail to manage children if they used their powers of observation. What the dentist encounters in the waiting room should give him most of the picture. Upon opening the waiting room door he may be confronted by any one of the following situations: (1) A quiet relaxed child sitting with the parent or a child engrossed in some picture or story book; (2) a child, with a large doll, clinging closely to an insecure parent; (3) a child of six to eight years of age sitting on the mother's knee; (4) a child accompanied by a mother, father, and one or more relatives; or (5) a child of any age showing his objection by crying loudly and slapping anyone in sight (this patient has probably kicked himself out of a score of offices and usually you have been forewarned).

Let us for a moment examine these behaviour patterns. The quiet relaxed child comes from a well disciplined home and is an ideal dental patient. This type comprises 85 to 90 per cent of the child patients in dental offices.

The child with the doll usually comes from a home where the parent uses distractive means of dealing with problems in preference to attending to a situation by facing it. She would not think of taking time to explain to the young child the mysteries of an electric storm, but probably would pull down all the blinds and proceed to distract the child's attention away from the storm. This parent usually

introduces her child by saying, "Look doctor, she brought the doll along to show you its teeth!" Let the mother know immediately that you are not interested in this little game. This type of parent is likely to tell the child that she is taking her to see her grandparents and to end up with her in the dental office. This mother is apprehensive toward dental treatment herself, and by attempting to condition her child, she overdoes it, and as a result the dentist has to deal with what is known as transferred fears.¹ In fact, type 3 and 4 in the above classification are splendid examples of this. Because of the parent's insecure attitude, the child cannot help but lack security in this strange environment. As described earlier in this paper, the parent of this child is invited into the waiting room on the first appointment. Of course in the case where the whole family comes along only one guardian is invited into the operating room, and care must be taken to choose the one closest to the child. This is usually the mother. However, with respect to the last example, the obstreperous child about which you have been usually previously advised, the rule just laid down is not followed.

To be successful with the management of an unruly child, one must secure a good history. If one talks to the parent at length on the telephone, one can usually get through to the problem. It should be remembered that the child who does not want to fit into any particular environment must develop skills that will help to protect him from the things which he does not want to encounter. This may be a show of strength demonstrated by scratching, kicking, biting or even more ingenious devices. It may be a request to go to the bathroom, or, it could be a vomiting episode and the more of the chyme that falls on the doctor the better the results. It may mean an attempt to escape by running away. Whatever the method, within the first few minutes of encountering it, the dentist must face the issue firmly. Delay means failure. A teacher who cannot control the children in her class in the first few minutes will

probably never learn to control them and it should be also pointed out that the teacher who fails to control the class is never respected. So it is with the dentist. When he fails, he loses the respect of the child, but when he is successful in managing the unruly patient the child not only becomes one of his best patients, but will respect his dentist for the rest of his life. The parents of such a child must be told, previously, that their co-operation is a necessity and the slightest interference on their part will terminate the agreement to work for the child.

Dr. W. E. Blatz,³ former director of the Institute of Child Study at the University of Toronto, in one of his lectures to the Faculty of Dentistry pointed out that a child has a goal and if that goal is easily attainable he will have no disturbance, and a calm, placid patient is the result. If, however, an obstacle comes between the child and the goal thus making the goal unattainable, there will be disturbance and this will be demonstrated by either escape or attack.

If he chooses to escape, the result is fear which eventually might build up to hysteria. Here it is necessary to help the child reach his goal by telling the truth and reassuring him that all will be well. This must be done with kindness, yet with firmness also. It is necessary to control the situation and help the child to gain security before this urge to escape reaches a critical point. This type of child may have to be physically removed from the parent's arms in the waiting room. At this point his concern will usually be demonstrated by crying. There will be no slapping, kicking, etc. With firm but kind handling, this child usually quiets down quickly. A good assistant who sincerely demonstrates love for children, standing by the side of the chair, usually helps the child find that feeling of security. If, however, the child chooses to attack the obstacle, then anger is the result and this is manifested by a kicking, slapping, scratching child. Most, if not all of these children, have to be removed from the waiting room bodily. The moment the child is

out of sight of the parents, he should be placed on his feet and firmly told to continue "under his own steam." From then on the dentist with the aid of his assistant must go on in a firm manner to finish the job. No attempt is made to make long explanations. Action is needed here, not words. If the child uses the "bathroom routine," allow him to go once and then the issue must be closed. Local anaesthesia is routine for all ages and the hypodermic needle used is never hidden. If the child refuses to open his mouth, an injection can always be given in the buccal fold without the mouth being open. If surface anaesthesia is used in the proper manner, the child experiences little pain. This is a first step toward gaining his trust. He has also learned that you are business-like and these two facts indicate to him that you are confident that you will successfully carry out a dental operation. The challenge is great and so is the reward. When the dentist hides behind a drug or a general anaesthetic, he is merely showing his own fear of the problem and inability to manage children.

The more often a child with a negative attitude toward dental treatment attacks and fails, the more he is likely to go into a tantrum. The best treatment for this is to tell the child to carry on, adding that you will reappear when all is quiet.

The following case history sheds some further light on the subject. A very sincere, excellent dentist called one day in desperation about a lad of six who vomited profusely every time an attempt was made to render any dental treatment. The dentist was instructed to have the parents see a child psychiatrist and if he were found to be a normal youngster then it might be reasonably assumed that this was a protective skill that he had developed to avoid dental treatment. This was done and, as was thought, he was a perfectly normal little boy. The mother was instructed to telephone the writer, and during a conversation that lasted almost a half hour she was allowed to tell her story. Three things emerged from the conversation: (1) he sucked his thumb; (2)

when he vomited in the home everybody jumped to his side; and (3) the boy was told many times a day that he was just like his father who vomited every time somebody looked at him. Of course, the boy was anxious to be like his father, and this was also a handy trick that he could use to protect himself against any environment into which he did not want to fit. Can we imagine any boy doing well in arithmetic if he were told by a parent not to expect too much for he himself was poor in arithmetic when he went to school? Eventually the youngster was brought to the office and when the waiting room door was opened, one might have expected to see an obstreperous child, but, instead, here was a happy, friendly lad. Asked if he sucked his thumb, he not only said "yes," but demonstrated the act and it was evident that the end of his thumb went far beyond his tonsils without causing vomiting. This was pointed out to him, and in a firm but friendly manner he was told that there was a rule in this office for children who vomited: "If you vomit on the floor, you wipe it up." Only a camera could record the expression on that boy's face, and from then on, all through the procedure, he watched like a sheep watching a hole in the fence, hoping for an opening to change the situation to his liking. Within twenty minutes the tooth was localized, a disto-occlusal and a buccal cavity were prepared. Then came the real test. A cotton roll was placed in the buccal sulcus and one in the lingual sulcus without the slightest sign of vomiting on his part. So for good measure two more were placed in the lingual sulcus and one was placed between the teeth. He was told to close on this, and was left in the chair in this position while the mother was being interviewed in the waiting room. She was sitting down on the edge of the seat and immediately asked how many times he had vomited. The advice given to the mother was to inaugurate the above-mentioned rule in the home and ignore such tactics if they were used. A number of visits have followed, and this child has

yet to use this skill that he had employed in the past to such good advantage. The questions are: why did the previous dentist fail and why was this method successful? The answer is that a better history was obtained before commencing treatment. Then, knowing the background, the writer went about the procedure in a firm, business-like manner that let the child know that his bluff would be called.

In this particular history it was evident that the mother was a sincere but over-attentive parent. There are other parents who, by their inattentive attitude, create a temperament in the child that is not easily changed in the dental office; and there are still others who, through ignorance, use fear as a method of discipline. These, and many other factors involving child-parent relationship, should influence the dentist to be more observant of the parents' behaviour and thus, by his dealing with the parental problem in the proper manner, the child will respond well to treatment.

Before concluding, it must be emphasized that all children should be treated with kindness, but with firmness and decisiveness as well. Father may be boss in the home, but inasmuch as this is the dentist's establishment, the dentist must

be in control here. One must remember too, that ridicule, social example and bribery play little part in helping to manage a child in a dental or in any other environment. Last, but by no means least, the dentist must like or learn to like children and to respect them by always telling them the truth.

RÉSUMÉ

L'auteur, dans cet article, décrit une façon rationnelle d'obtenir la collaboration de l'enfant dans le cabinet dentaire. Il énumère les comportements des parents et des enfants au cours de la première visite de ceux-ci; il établit des relations entre ces comportements et l'influence qu'ils exercent sur l'attitude de l'enfant; il énumère les techniques psychologiques que le dentiste devrait adopter et celles qu'il devrait rejeter pour remplir son devoir envers les enfants.

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The Management of Some Common Paedodontic Problems

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It is no longer necessary to present convincing arguments about the importance of early dental care or the necessity for every dentist to be competent in

paedodontics. In fact, because of many advances in dentistry for children, the practitioner does not have to rely almost entirely on empirical methods for treating his young patients as was the case a few years ago. A number of reliable clinical

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TABLE 1 Incidence of dental anomalies in 3,557 children.

	No. examined	Missing teeth	Supernumerary teeth	Fused teeth	Peg-shaped teeth
Deciduous teeth	1,795	82	32	14	4
Permanent teeth	1,762	132	47	3	8
Total	3,557	214 (6.01 %)	79 (2.2 %)	17 (.47 %)	12 (.33 %)

research reports are now available which, if applied, will greatly improve the type of service that can be provided for children. The purpose of this paper is to review some of these reports and to point out how the findings can be incorporated into modern dental practice for children.

RADIOGRAPHIC SURVEY

In considering the type of radiographic survey needed for children, one recognizes that many factors such as age, pathological conditions, radiation hazards and cost, all influence the type of survey required. In fact, some of these factors present conflicts. For example, to obtain as much diagnostic information as possible perhaps ten periapical and two bite-wing films should be taken. On the other hand, the problem of radiation hazards, which cannot be ignored, suggest a minimum number of exposures. A review of a report by Clayton¹ on his radiographic findings in children can help to resolve some of the conflicts (Table 1).

In the deciduous dentition the incidence of missing, supernumerary, fused and peg-shaped teeth was 4.62 per cent, 1.78 per cent, 0.77 per cent, and 0.22 per cent respectively. The incidence of these anomalies in the permanent dentition was 7.48 per cent, 2.61 per cent, 0.17 per cent, and 0.45 per cent. Although these were the findings in a large paedodontic practice it is fairly safe to conclude that approximately *one child in fifteen will present with a missing, supernumerary, fused or peg-shaped tooth*. It is the responsibility of the dentist to find these anomalies early so that every possible step can

be taken to prevent more serious consequences in the developing dentition.

Since anomalies in the deciduous dentition are quite likely to be seen on visual examination without radiographs, a bite-wing survey for the detection of caries should suffice for most children five years of age and under. Periapical films should be taken where teeth are to be removed or where anomalous conditions not visible in the mouth are suspected.

This is not the case in the mixed dentition stage, however. Since permanent missing, supernumerary and fused teeth can greatly affect normal development of the permanent dentition if not detected early, a bite-wing survey is inadequate. Clayton's findings¹ reveal that missing teeth constitute the most frequent anomaly and they are most likely to be second bicuspid and maxillary incisors. In the Children's Clinic at the Faculty of Dentistry of the University of Alberta the most frequent occurrence of supernumerary teeth is in the maxillary incisor region. In the mixed dentition stage, therefore, a minimum radiographic survey should include views of the bicuspid and the maxillary incisor areas as well as bite-wing views. Where an orthodontic problem exists, cuspid and second molar views would of course also be necessary.

MISSING TEETH

No fixed rules can be applied to the treatment of missing teeth. Prompt replacement by means of a removable partial denture or the insertion of a non-functional space maintainer is the treatment for missing deciduous teeth when-

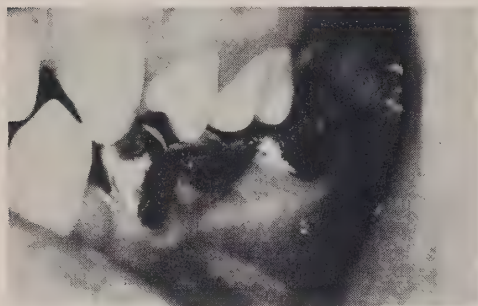


FIGURE 1 Fixed bridge replacing a congenitally missing mandibular left second bicuspid in a 12-year-old patient.



FIGURE 2 (a) Supernumerary mesiodens detected just at the time of eruption. This tooth was removed and the permanent maxillary central incisors erupted soon afterward. (b) Mesiodens detected at age 3.

ever their absence contributes to drifting of the adjacent teeth, over-eruption of opposing teeth or speech problems. In the experience of the author, cast metal partial dentures have proved to be much more desirable than acrylic appliances because of the length of time that the prosthesis is necessary.

Where permanent teeth are missing, serial radiographs should be taken over a period of time and, whenever possible, a consultation held with an orthodontist, especially in the case of missing maxil-

lary lateral incisors. Such cases require careful consideration of all related factors before a plan of treatment is begun.

In the case of missing second bicuspid, if the second primary molar roots resorb within the normal exfoliation period there should be no hesitation in placing a fixed bridge, even at age twelve, to assure the best possible alignment of the permanent dentition. This was done for the twelve-year old boy who had a congenitally missing second bicuspid, as illustrated in Figure 1.

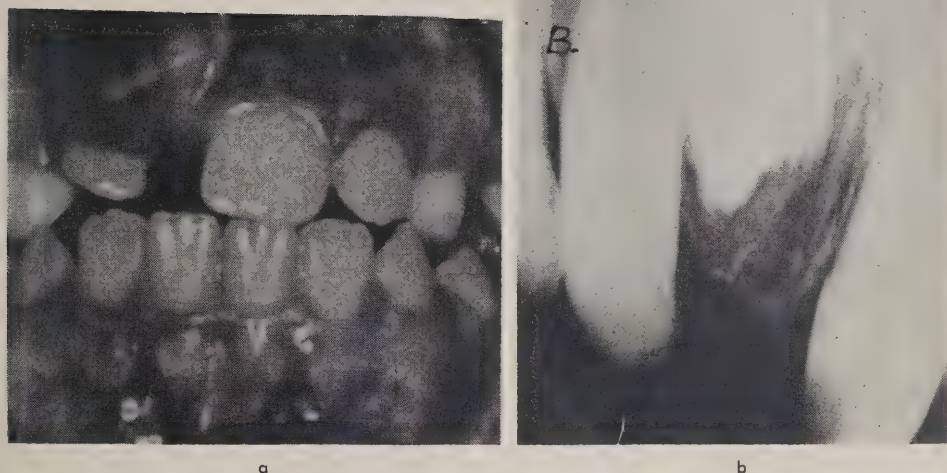


FIGURE 3 (a) Failure of eruption of the maxillary right central incisor and loss of space due to the supernumerary tooth seen in (b).

SUPERNUMERARY TEETH

In the deciduous dentition such teeth are usually seen in the maxillary incisor region, generally in the lateral incisor area. Since they often erupt in good alignment they can easily be overlooked. It is best to remove such teeth if the adjacent central incisor or cuspid has been displaced. If not, the supernumerary tooth may be left since removal may result in disfigurement. One should always look for the presence of a supernumerary permanent incisor in such cases. Supernumerary teeth in the permanent dentition are usually found in the bicuspid region or in the incisor region. The treatment in both cases consists of prompt removal to prevent disturbances in normal eruption of the permanent dentition.

Supernumerary permanent teeth in the incisor region are worthy of special consideration as far as the general practitioner is concerned. If he routinely takes a large periapical radiograph of the max-

illary incisor region in the 6-8 year age group and is on the look-out for supernumerary permanent teeth, such teeth will be detected early and their prompt removal will allow normal eruption of the permanent incisors. Two such cases are shown in Figure 2. If, however, supernumerary teeth are overlooked, gross mutilations of the permanent dentition will usually result necessitating complicated orthodontic treatment or needless extraction followed by the insertion of a prosthesis. Such a case is seen in Figure 3.

Assuming that a practitioner is not in the habit of taking a routine periapical radiograph of the maxillary incisor region, certain clinical signs may suggest the possible existence of a permanent supernumerary tooth. Whenever a maxillary permanent incisor has erupted into occlusion and the corresponding tooth on the opposite side of the arch has not appeared, one should immediately suspect the presence of a supernumerary tooth (Fig-

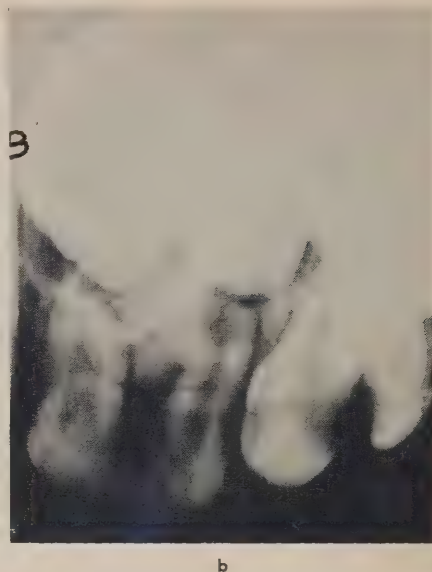
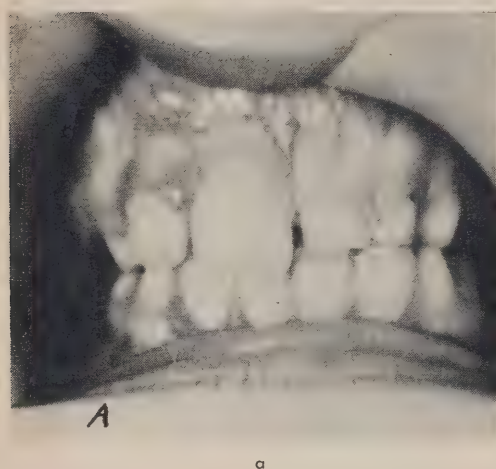


FIGURE 4 (a) All permanent incisors except the maxillary left central and lateral incisors have erupted and are in occlusion. (b) An abnormally formed supernumerary tooth can be seen between the unerupted maxillary left central and lateral incisors preventing eruption of these teeth.

ure 4). Unfortunately, when the condition has developed to this stage, it is almost mandatory to place a space maintainer since the root of the unerupted tooth is usually well developed and even though the supernumerary tooth is removed the permanent tooth will erupt very slowly. An example of two children in the same family, both with supernumerary incisors, and the method of management for each is illustrated in Figures 5 and 6.

FUSED TEETH

Such teeth occur rarely but when they do, early detection and treatment are necessary in order that the permanent dentition will have the best possible opportunity to develop normally. An example of fused teeth is seen in Figure 7. The tooth was sectioned and one half removed. Unfortunately, an insufficient amount of tooth structure was removed

and a small separation still remained between the central and lateral incisors at the time of the last examination.

ANKYLOSED TEETH

Ankylosis should be suspected whenever a tooth is observed below the occlusal level of adjacent teeth in the same arch and provided the tooth in question is not in the process of normal eruption. Early detection of ankylosed teeth and prompt treatment can prevent severe interferences with growth and the complicated surgical procedures usually necessary when the condition is allowed to progress unhindered similar to the case shown in Figure 8. Most cases can be found in the early stages if an examination of the teeth in occlusion is routinely made and if one is on the look-out for ankylosed teeth when examining bite-wing radiographs. Figure 9 illustrates a case of an-

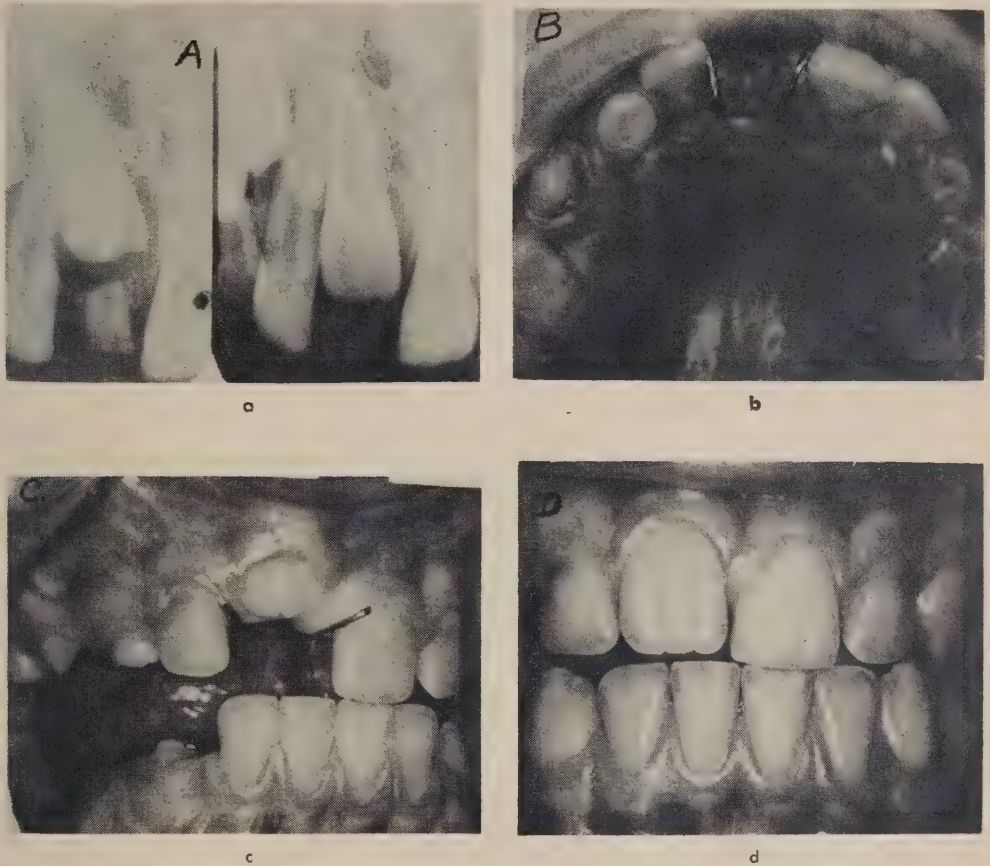


FIGURE 5 (a) Supernumerary tooth preventing eruption of the maxillary right central incisor and radiograph of the same patient three months after removal of the supernumerary tooth. (b) Palatal plate space maintainer. (c) The maxillary right central incisor moving down. (d) The maxillary right central incisor is almost in occlusion. Time lapse from (a) to (d) was two years.

kylosis which was detected early. A three-month observation period will confirm the diagnosis. If ankylosis is present, the tooth will appear to be further submerged below the occlusal level. The treatment of choice for ankylosed deciduous teeth is prompt removal followed by space maintenance. In older patients where little growth potential remains, restoration of the tooth to its former occlusal level may be attempted.²

GINGIVA

A number of reports on gingival conditions in children are worthy of review but are rather difficult to translate into effective guides for improving the health of gingival tissues by clinical methods. Parfitt³ noted the beginning of gingivitis at about age three with a gradual increase in prevalence which rose to a peak at age 11 and an increase in severity which rose to a peak at age 13. In a study



FIGURE 6 Sister of the patient seen in Figure 5. A supernumerary tooth was detected at age 9. It was removed but no space maintainer was placed. The space closed leaving the maxillary right central incisor buried. To facilitate eruption it was necessary to refer the patient to an orthodontist who had to remove the maxillary bicuspids in order to make space for the right central incisor.

FIGURE 7 (a) Deciduous and permanent mandibular left lateral incisors fused to supernumerary teeth. When the fused permanent teeth erupted they were sectioned and one portion was removed. (b) A small portion of the permanent mandibular left lateral incisor was not removed, and this tooth was slow in making contact with the permanent mandibular left central incisor.

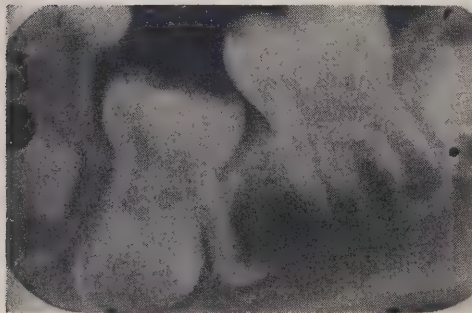
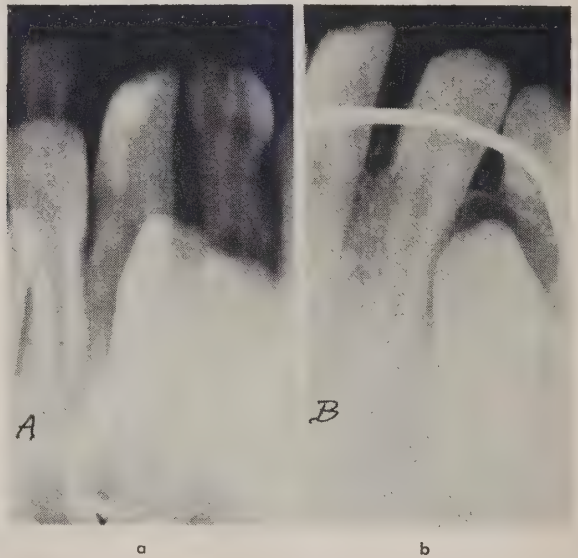


FIGURE 8 This ankylosed deciduous mandibular left second molar was once observed a few millimetres below the occlusal level of the deciduous first molar, at which time a cement filling was placed in the crown. Thereafter, contact was lost with the patient, but when he returned subsequently the deciduous mandibular second molar was not visible in the mouth. A radiograph revealed ankylosis of the tooth.

of Canadian children, McIntosh⁴ noted a decrease in the incidence of pockets (3 mm. or over) at the labial surface of maxillary incisors from age six to eleven but an increase in the number of such pockets at the mesial surface of first permanent molars during the same period.

It is possible that these gingival changes are all a part of normal growth. As a growth spurt occurs, more swelling and inflammation of the gingiva takes place. The findings of Parfitt³ that there was decreased incidence of gingivitis between August and November and the report by Reynolds and Sontag⁵ that there is a slowing of growth during the same period are worthy of note. Further evidence to support this hypothesis can be found in the findings of both Parfitt³ and Cohen⁶ that the incidence of gingivitis is at its highest level at an earlier age in girls than in boys and at almost the same ages as the increase in growth rates reported by Shuttleworth.^{7*}

It is possible that the increase in the incidence of periodontal pockets with increasing age as reported by McIntosh⁴ is a truer indication of the health of the periodontal structures than the inflammatory changes in the gingiva reported by Parfitt³ and Cohen⁶.

*The studies by Reynolds and Shuttleworth are reviewed by J. M. Tanner in a publication entitled *Growth at Adolescence*. Springfield (Illinois), Charles C. Thomas, 1955.

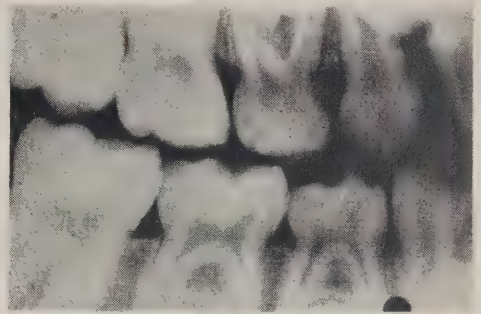


FIGURE 9 Ankylosed deciduous mandibular right first molar detected early in a bite-wing radiograph. The ankylosed tooth is below the occlusal level of the adjacent teeth.

Whether these gingival changes observed in children are a part of normal growth changes or are due to lack of good oral hygiene is not clear since long term studies on the effectiveness of tooth brushing in reducing gingivitis in children have not been reported. Until these questions are settled young patients should be taught, and encouraged to practise, effective methods for improving oral hygiene and should periodically have a prophylaxis in order to keep the gingiva as healthy as possible. Although many methods for improving oral hygiene have been recommended, a recent study has shown that the teaching of toothbrushing will be largely ineffective unless the child is provided with a toothbrush that



FIGURE 10 A typical proximal margin defect is seen in (1). The altered cavity design and restoration are seen in (2) and (3).

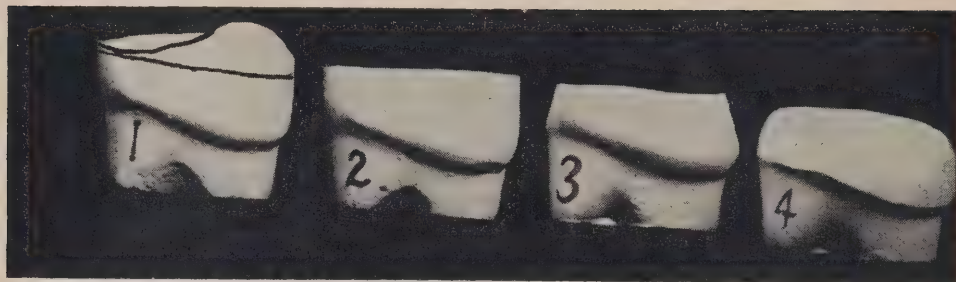


FIGURE 11 Four stages in the preparation of a deciduous molar for restoration by a pre-formed steel crown.

permits him to mimic in his own mouth the movements that have been demonstrated to him on models.⁸

OPERATIVE AND RESTORATIVE PROCEDURES

Amalgam.—Although its composition has changed very little in the past hundred years, dental amalgam alloy remains the most frequently used restorative material for both adults and children. Lampshire⁹ concluded, on the basis of *in vitro* studies, that isthmus fractures in class II restorations in deciduous molars could best be prevented by incorporating (a) a wide isthmus equivalent to one-quarter of the bucco-lingual diameter of the tooth), (b) a concave pulpal floor together with a rounded pulpal axial line angle, and (c) proximal retention grooves, in the cavity preparation.

In a study of 1,009 class II amalgam restorations in which this cavity design was used, only sixteen isthmus fractures occurred.¹⁰ However, proximal margin defects occurred frequently and especially on the disto-buccal margin of mandibular first molars. An altered cavity design, as shown in Figure 10, was tried to overcome this defect, and the incidence of buccal proximal margin defects in mandibular first molars was thereby decreased from 29.04 per cent to 5.0 per cent.

Pre-formed Stainless Steel Crown.—The most significant advance in the restorative field in paedodontics has been the intro-

duction of the stainless steel crown. Nevertheless, too few dentists have made good use of this type of restoration probably because of difficulties encountered in fitting the crowns. The technical procedure used by the author for restoring a primary molar with a pre-formed crown is as follows (Figure 11):

1. With the teeth in occlusion a line is drawn with a pencil on the buccal surface of the tooth to be restored, using the cusps of the opposing teeth as a guide.

2. The occlusal portion of the tooth is reduced level to this line. As a result, the tooth should no longer occlude with the opposing teeth.

3. Mesial and distal cuts are made to remove all contact with adjacent teeth.

4. All sharp, line and point angles are rounded. *If this is not adequately done, considerable difficulty will be encountered in seating the crown.*

5. A crown is selected which fits snugly over the prepared tooth and does not project excessively outward into the gingival soft tissue. If the other teeth in the patient's mouth exhibit considerable wear, the tips of the cusps and the central groove of the crown should be flattened. This is achieved by placing the crown on a paper pad and flattening the cusps and groove with the aid of a large amalgam condenser and hand mallet.

6. Using curved crown and bridge shears, about one-eighth inch of metal is removed from the circumference of the gingival portion and a slightly larger amount from the proximal areas.

7. The crown is placed on the tooth and forced into place with the fingers. A tongue blade split in half lengthwise is then placed on the occlusal surface of the crown and the child is told to exert considerable biting pressure. This will usually force the crown to place. If not, the most likely reason is that an insufficient amount of tooth structure has been removed.

8. After the crown has been seated, it is removed and the gingival portion is crimped inward with fine-nosed pliers as seen in Figure 12. The small projections at the gingival margin are smoothed with No. 114 contouring pliers and a rubber abrasive wheel.

9. The crown is again reseated and the occlusion checked in both centric and lateral movements. If interferences are present, they can be reduced by judiciously grinding the cusps or sulci of the opposing tooth or by altering the shape of the cusps as in (5) above.

10. The crown is cemented and excess cement is removed from the gingival sulcus.

The steel crown restoration is an invaluable aid where caries susceptibility is pronounced. Too often dentists will devote several hours of total operating time to one tooth over a period of several years as the carious process extends from one surface of the tooth to another. With a little practice any dentist can learn to place a crown on a primary molar in half an hour or less. This is an important consideration in view of the increasing demand for dental service for children and the necessity for every dentist to improve the efficiency of his practice.

CONCLUSION

The practice of paedodontics can be considerably improved by the application of knowledge obtained from published research reports. A number of such reports pertaining to dental radiology, gingival and periodontal disease and restorative procedures in children have been reviewed and suggestions made for their application to clinical practice.



Figure 12 Short beak, fine-nosed pliers No. 139 are used for crimping the gingival portion of the pre-formed steel crown. No. 114 pliers are used to smooth the rough edges.

RÉSUMÉ

L'auteur traite du diagnostic et du traitement de certaines pathologies soulevées par la denture primaire, mixte et permanente, par l'anodontie, par des dents surnuméraires, des dents fusionnées et ankylosées. Il se rapporte à des recherches qui ont été faites récemment sur les maladies des tissus durs et des tissus mous et à leur application pratique à la pédodontie.

L'auteur traite des nouveaux concepts au sujet de la préparation de couronnes préfabriquées en acier inoxydable pour les dents très avariées ou celles d'enfants qui souffrent d'une susceptibilité considérable à la carie.

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Practice Administration in a Dental Practice Accepting Children

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Since the premise of regarding children as small adults would appear to be valid, the administrative procedure in a practice accepting children should be harmoniously related to general practice principles. To do otherwise would invite a conflict of administrative concepts. We should accept the proposition, however, that management of the children's phase of a general practice does require specific departures and extensions of principles and methods. The author will attempt to delineate these areas insofar as they apply to diagnosis, treatment planning and parent counselling, fees and business procedures:

1. General practice, not paedodontic practice, is our area of concern. The latter, because of the specialty connotation, has a direct relation to the more difficult and bizarre problems in diagnosis, management or treatment.

2. Auxiliaries should dominate secondary procedures. They will assume most duties other than those required of the graduate dentist. Because of his extensive training, the dentist should exercise competent judgement in the assignment of specific tasks.

3. The assumption will prevail that pre-school and junior school children comprise the largest contemporary group where efficient practices may reap the greatest long term gains in dental health.

4. Reasonably modern and functional equipment and facilities should exist in offices receiving children.

5. The time element involved in all phases will be viewed critically. There should be, however, a harmonious flow and efficiency with respect to the time factor and overall results achieved. The assembly line principle, however, is not applicable to dental procedures in children.

DIAGNOSIS

In general practice the immediate objective is to provide a broad range of dental care to the average family. Patients with anomalous conditions are referred to a specialist or at least the general practitioner will wish to share some of the responsibility with the specialist concerned.

Referrals should be made promptly if the diagnostic data reveals problems which are beyond the scope of a general practice. Border line cases may manifest a clinical situation where treatment could be attempted by a general practitioner following a consultation with an orthodontist or paedodontist or with guidance from these specialists at specific critical junctures in treatment.

The writer believes it is desirable to have the parent accompany the child to

the examination room during the initial appointment — if only for the purpose of conserving time and developing an immediate awareness of:

1. Child-parent relationship.
2. General attitude, intelligence and personality of the parent.
3. Specific attitudes of the parent to dental procedures.
4. Receptiveness of the parent to preventive instruction.
5. Gross dento-facial similarities between the parent and the child.

Additionally, the amenities of introduction may be conducted effortlessly and without protraction. Following the three or four minutes required to assess the foregoing points and record pertinent information, the parent may be requested to return to the reception room. Although this latter procedure may be elective from the dentist's viewpoint, disadvantages generally result from continued presence of the parent in the examining room.

It is assumed that fundamental chart information has been provided to the secretary by the parent prior to the child's introduction to the examining room and that the dentist receives this information concomitantly with the child's entrance. A wide range of charts suitable in adult practice are perfectly acceptable with children. Obviously the chart should provide a diagram of deciduous teeth. The only other basic requisite is a reasonably large, clear space for the notation of diagnostic data. Abnormal medical histories, drug dosages, specific cusp relationships with accompanying dates — all are representative of a long list of possible notations. In its own way this is an attempt to retain the "clear page and pen" approach of the medical profession in recording relevant medical data during the taking of a history.

A systematic examination of the hard and soft tissue in the oral cavity ensues. An evidence of normality should not require notation. Abnormalities only should be recorded but a point of doubt should become part of the record. Moreover, an intelligent perspective should be main-

tained because of the possibility of linked factors. For example, thick, ropy saliva may be important in the caries susceptible mouth but relatively unimportant in the caries immune situation. Necessary radiographs are taken at this stage and preferably immediately developed by the assistant in order that a quick assessment of the radiological findings may be made by the dentist. Orthodontic problems amenable to interceptive treatment by a general practitioner will require study models. Potential working models should be poured from the same impression. The assistant is notified early in the examination of the dentist's intention to take impressions so that the appropriate trays for alginate material are at hand and she will be prepared to mix this material when directed. Necessary models should be poured, trimmed, boxed and labelled by the assistant or laboratory technician. When completed, the models are placed on end on a flat surface with the cusp contact in centric relation.

From a diagnostic point of view, the parent and child will have been assessed, a visual clinical examination conducted, appropriate notations made, radiographs taken and study models made. The evaluation of this data when assembled in its entirety may be accomplished at a later time without requiring the presence of the patient or parent. At this stage the patient should be dismissed. This appointment has consumed approximately fifteen minutes; the next appointment will appropriate fifteen minutes of the dentist's time.

TREATMENT PLANNING AND PARENT COUNSELLING

At the second appointment the following items are covered:

1. A concise and clear interpretation of the dental condition of the child is given to the parent. This should include an accentuation of treatment priority in the areas of concern. An incipient anterior crossbite that could be corrected quickly if treatment is not delayed, is certainly

more urgent than a shallow carious lesion on a deciduous first molar.

2. The positive qualities of preventive measures are stressed in a general way with specific discussion left in abeyance.

3. A comprehensive treatment plan is presented along with recommendations, where indicated, for medication prior to operative procedures.

The three aforementioned tasks will occupy approximately fifteen minutes of the dentist's time, but his participation may be terminated at a point where duties may be delegated to the dental hygienist, registered nurse or secretary. Specifically, in item (2) the demonstration of a proper tooth brushing technique and discussion of cariogenic foods as well as other nutritional aspects should be conducted by the dental hygienist or registered nurse. In item (3), the secretary should be responsible for discussing:

(a) Appointment booking for all necessary appointments.

(b) Total fee involved.

(c) Method of payment.

Let us assume for the moment that all these tasks have been accomplished and that the dentist has expended thirty minutes of his office time plus a few minutes in private evaluation of diagnostic data. We may assume, too, that the parent and child have been reasonably receptive to all that has transpired. Under these circumstances, the following objectives will have been met:

1. Preventive measures will have been introduced and presumably will be effected immediately. This is mostly home care to be sure, but a part of treatment nevertheless.

2. Clinical and management problems will have been anticipated; financial and time allowances will be made accordingly.

3. The development of a rapport will have been initiated between dentist, child and parent. This specifically implies that a definite responsibility must be assumed by the latter two members if the overall dental objective is to be attained.

4. A total fee will have been estimated with reasonable accuracy and a method of payment agreed upon.

5. Appointments will have been booked at one time, thus eliminating further negotiations at subsequent appointments.

6. Repetitious statements on any future phase of treatment will probably be eliminated because of the systematic "package presentation."

In a very real sense, then, the way has been cleared for the optimum result by utilizing the minimum amount of time on the part of the dentist. Perhaps it is redundant to suggest that all this would be impracticable without the use of trained auxiliaries. Apart from the inordinate amount of time involved for the dentist, basic economic limitations would probably preclude routine conduct of the foregoing procedures without the aid of these auxiliaries.

FEES AND BUSINESS PROCEDURES

One clarification has been deliberately omitted up to this stage. How does the dentist transmit his requirements for fees and appointments to the secretary? Undoubtedly many systems would suffice. The system here described, as employed in the author's practice, is one. Fifteen minutes will be represented as one unit which will be written as: (1), set within a full circle.

Let us suppose that a particular patient requires restorative treatment for the occlusal grooves and interproximal contact areas of all deciduous molars, sixteen surfaces in all. We wish to complete eight surfaces per appointment with the utilization, in this patient, of 25 mgm. of meperidine hydrochloride (*Demerol*) given in advance of the first appointment by the parent. One line on the treatment chart is used at each appointment and pencilled notations are made by the dentist as shown in Figure 1.

To the secretary this is a clear instruction: first appointment, one hour with 25 mgm. of meperidine to be given to the parent with instructions for administra-

DATE		Dr	Cr	Bal
Oct. 1	$\frac{ed}{ed}$ 8A 25 DEM (4)	Fee		
	2 WK			
Oct. 9	$\frac{de}{de}$ 8A (4)	Fee		
	DH 4 CH TB (2)	Fee		

FIGURE 1 Entry on patient's record giving advance details of services to be rendered at the second and third appointments.

tion to the child. Second appointment, two weeks later, for one hour with no meperidine provided. At this session, a half hour is booked with the dental hygienist (DH) for topical stannous fluoride application (F) as well as a check (CH) on the child's tooth brushing (TB) habits and oral hygiene.

Apart from the resultant clarity to the secretary (as opposed, for example, to oral instructions) the dentist has prepared an analysis of the time required to accomplish the necessary operations. Consequently, in the determination of fees, he is more adequately provided with a reasonably sophisticated time projection in addition to the accepted per operation fee schedule for his locality. In all likelihood a fair and equitable fee for professional services may be calculated quickly and this is pencilled in the 'Dr' column and totalled by the secretary. As each stage or 'line' of work is completed, the pencilled notations are replaced in ink.

There is another aspect of dentistry for children in general practice which is susceptible to systematic organization. Interceptive orthodontic treatment commonly involves removeable appliances and treatment may be roughly divided into two phases:

1. The placement and proper initial adjustment of the appliance and the necessary instructions to both parent and child.

2. The periodic observation of the patient and adjustment of the appliance.

In the first phase, the proper insertion, of course, should be accomplished by the dentist. However, the instructions to both parent and child may be readily given by the dental assistant or the dental hygienist. It is this latter aspect which is usually more time consuming, particularly if the child has difficulty in mastering the proper insertion and removal of the appliance. In the second phase it is possible to arrange a 'block' of time which could be reserved each week for check-up appointments. Since these check-up appointments take but a few minutes and since the mental and physical effort for each case becomes minimal when the general practitioner directs his clinical thoughts for a sustained period along orthodontic lines, five-minute appointments are not unrealistic. Of course the interval between appointments will vary with the type of case and the stage of treatment. In the author's practice 4 P.M. to 5 P.M. each Wednesday afternoon is tentatively reserved for interceptive orthodontic check-ups and it is possible to accommodate

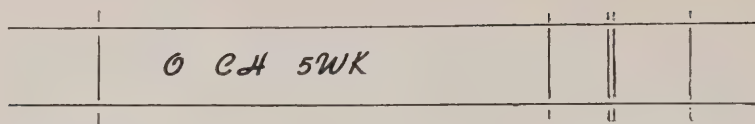


FIGURE 2 Entry on patient's record giving instructions for an orthodontic check-up five weeks hence.

roughly twelve children for this purpose. Rebooking these patients becomes a simple task since the pencilled notation on the treatment chart to indicate an orthodontic check-up appointment in five weeks assumes the form shown in Figure 2.

The patient, parent and secretary become accustomed to the one period for this type of appointment. Thus the choice of time is not left open to indecisive discussion.

A leaflet providing general instructions relating to removeable appliances can be reproduced and given to each child (Figure 3).

CONCLUSIONS

1. Practice management in general practices accepting children should observe the essentials of administration for

adult procedures. Modifications and extensions of these essentials should complement and not antagonize the existing system.

2. In particular, many charts and general records are compatible with both adult and child procedures.

3. Presentation of preventive information and treatment, the detailed presentation of fees, the basis for payment, supplying of necessary drugs, appointment booking and the final preparation of diagnostic data should be delegated to dental auxiliaries.

4. Successful integration of procedures for children in general practice increasingly requires a covetous approach to the dentist's time and an awareness of the overall economic deficiencies that ensue when this factor is relegated to a subsidiary position.

APPLIANCE INSTRUCTIONS	
For.....	Patient's Name
1. <u>Thoroughly</u> brush <u>all</u> sides of your teeth and wash <u>all</u> sides of the appliance with tap water following meals and snacks.	
2. <u>Immediately</u> report soreness caused by the appliance.	
3. <u>Immediately</u> report any breakage in the appliance.	
4. <u>Do not</u> remove the appliance from your mouth except for any of the above three reasons. <u>Remember</u> your teeth will straighten only when the appliance is being worn, <u>not</u> when it is out of your mouth.	

FIGURE 3 Patient's instruction leaflet regarding the care of orthodontic appliances.

RÉSUMÉ

L'auteur énumère les principes et la procédure qu'il applique dans son propre cabinet.

L'omnipraticien qui traite les enfants devrait appliquer pour eux les mêmes formules qu'il utilise pour les adultes dans l'administration de son cabinet. Le fait de traiter des enfants ne devrait pas révolutionner le système ordinaire, mais seulement le modifier, l'étendre et le compléter.

Par exemple, certains genres de dossiers et de diagrammes peuvent s'utiliser aussi bien pour les adultes que pour les enfants.

On peut confier aux assistantes du dentiste les tâches suivantes: les renseignements qu'il faut fournir au sujet des traitements et des soins d'hygiène à la maison; les questions d'honoraires et la façon de les payer; la remise des médicaments; les rendez-vous; l'inscription des données de l'examen sur les fiches.

L'intégration de la pédodontie dans une pratique générale, pour réussir, doit ménager le temps du dentiste et tenir compte des difficultés économiques qu'elle suscite quand elle est reléguée au second plan.

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Preventive and Interceptive Orthodontics

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In recent years much interest has centered on preventive, interceptive and corrective orthodontic treatment as an aid to the development of normal occlusion. Many papers have been written on this subject which adequately cover the treatment phase, but few authors have considered the importance of differential diagnosis for the general practitioner. Only with this knowledge can he differentiate between the simple cases, where good treatment results are possible, and those complex cases which are difficult to treat even by an experienced orthodontist.

At the very beginning of his practice a dentist may have had an unhappy introduction to orthodontics. He may have treated several cases and each time a relapse may have occurred. Is it any wonder then that after a few years in general practice any aspect of orthodontics, including prevention and interception, is left completely to the orthodontist. This, of

course, is a tragedy since patients who require preventive care do not present malocclusions and therefore do not see the specialist.

In order to practise dentistry conscientiously we can no more disregard malocclusion than we can disregard dental caries or periodontal conditions. In 1951 the American Association of Orthodontists' Committee on Education stated the following principles relative to undergraduate orthodontic instruction:

1. To anticipate and detect malocclusion.
2. To take steps to prevent and intercept malocclusion where possible.
3. To treat simple cases or simple immediate problems of complex cases.
4. To use this knowledge as an adjunct to procedures in all other phases of dental practice, lining up teeth for bridges, etc.

5. To know what cases to avoid and refer to more experienced men in the field.

On the basis of this report the principal aim for teaching orthodontics is to provide the necessary diagnostic technique for evaluating the extent of dento-facial balance or imbalance and the aetiological factors involved. With this information available we have an opportunity to determine the manner in which preventive and interceptive treatment will contribute to the normal development of occlusion.

Let us first of all define preventive, interceptive and corrective treatment.

Preventive Treatment.—Here treatment is undertaken to preserve normal occlusion. This embraces all phases of preventive dentistry with respect to diet, nutrition and caries control; restorative treatment; and treatment of periodontal disease. The procedures include space maintenance; removal of ankylosed or over-retained deciduous teeth; supernumerary teeth; controlling ectopic eruption of maxillary first permanent molars; equilibration of occlusal interference; elimination of deleterious habits of the tongue and lips; abnormal swallowing; sucking of fingers, thumbs and other objects; and treatment of the abnormal inferior or superior fraenum labii.

Interceptive Treatment.—This term describes treatment of malocclusion which may be established very early in life as a result of the influence of heredity or environment. For example, cases of tooth and bone size disproportion are established at conception due to hereditary factors. The most common problems associated with this group are space regaining; occlusal equilibration; elimination of deleterious habits of the thumb, fingers, tongue and lips; mouth breathing where a minor degree of malocclusion is present; removal of offending deciduous teeth in order to guide eruption (e.g. checking for labial prominence of unerupted maxillary cuspids at approximate age of eight to nine years, in case these teeth should other-

wise erupt lingually); serial extraction; and the removal of ankylosed teeth.

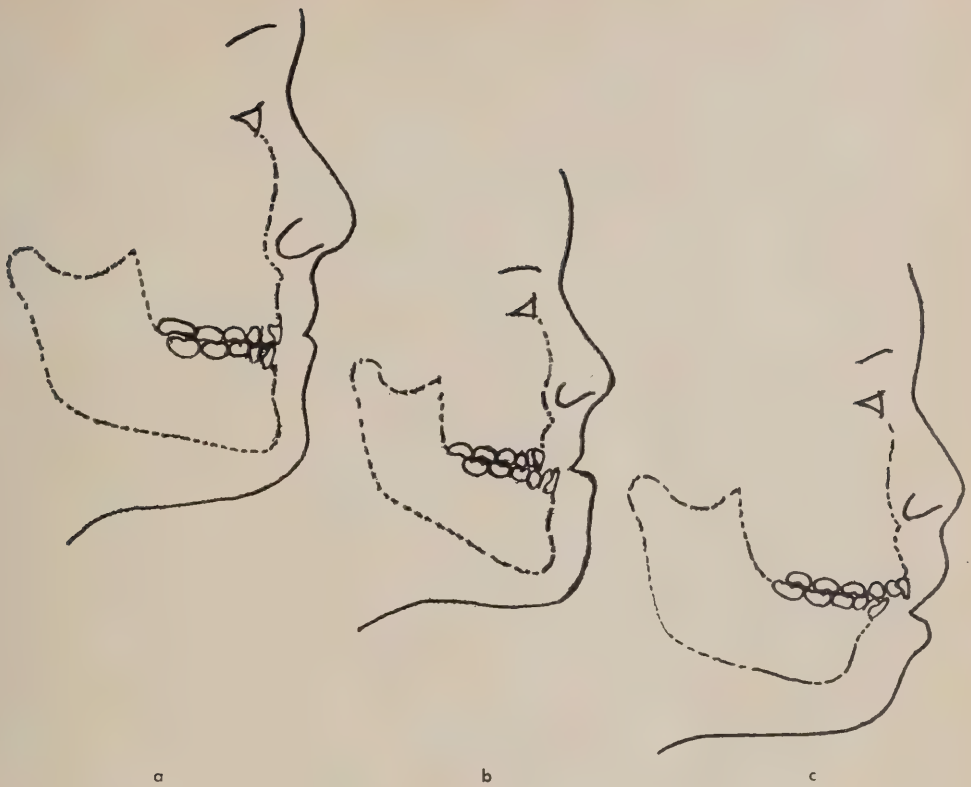
Corrective Treatment.—This term describes treatment of a well established malocclusion where an improvement in the occlusion can only be obtained as a result of appliance therapy. Examples include malposed and rotated teeth; cross-bite of the first permanent molars; anterior and posterior cross-bites; and the complex cases treated by the orthodontist.

Since the treatment of a specific malocclusion may vary according to its aetiology, it is easier to classify these conditions on the basis of their origin (e.g. dental, functional, or skeletal) rather than the tissues involved.

Conditions of Dental Origin.—These problems involve primarily the teeth and their supporting structures, e.g. individually malposed teeth; premature loss of deciduous or permanent teeth; ankylosed over-retained deciduous teeth; supernumerary teeth; checking labial prominence of the maxillary cuspids; ectopic eruption of maxillary first permanent molars; abnormal fraena; anterior and posterior cross-bites; and a few Class II and Class III malocclusions.

Conditions of Functional Origin.—This group includes malfunction of the dento-facial musculature resulting from thumb and finger sucking, lower lip biting, mouth breathing, etc., with consequent occlusal interferences, abnormal patterns of mandibular closure, and interrupted reflexes, exemplified as abnormal lip closure or perverted muscular contractions, such as tongue thrusting during swallowing and posterior cross-bites. Many of these conditions are of dental and functional origin.

Conditions of Skeletal Origin.—This includes problems of asynchronous growth of the bones of the face and may be the result of a genetic cause or a severe manifestation of some systemic disease. The



The three basic facial types. (a) Class I relationship. Most defects of the occlusion are of dental or functional origin. (b) Class III relationship. Facial type giving rise to varying degrees of anterior crossbite. (c) Class II relationship. Facial type giving rise to varying degrees of maxillary protrusion.

growth pattern may be reflected in an orthodontic problem such as a Class III mandibular prognathism, a Class II maxillary protrusion or deep overbite cases. Included in this group are those malocclusions characterized by generalized crowding or disproportion between tooth and bone size. The treatment of this group of malocclusions is the most difficult and unless one has training, experience and interest, many problems can be encoun-

tered. These cases should have an orthodontic consultation.

Treatment will therefore be considered from the standpoint of salient characteristics whereby one can differentiate between the dental, functional and skeletal type of occlusion problems.

Within this context it should be realized that while some defects may be the result of only one aetiological factor, many defects arise from the interplay of two or all three factors combined.

Diagnostic Aids.—In many cases one cannot make a diagnosis on the basis of models alone. When possible one should make use of all available methods, including a thorough clinical examination, intra-oral radiographs, tooth size prediction chart, dental models, diagnostic wax set-up, and cephalometric radiographs if available.

PREMATURE LOSS OF DECIDUOUS TEETH

Premature loss of deciduous teeth or carious involvement of their contact areas can in many cases disturb the balance of a normal occlusion. This disturbance may cause improper relationship of the cusps of the opposing teeth, and/or the loss of space necessary for the accommodation of one or more teeth. An error in the placement of a space maintainer is much more excusable than neglecting to place one where it is indicated. The best fixed space maintainer is a well constructed amalgam restoration, placed before the carious process involves the pulp.

In a child who has lost one or more deciduous teeth, the following treatment is recommended:

(a) If the deciduous second molar is lost, the space is maintained until the second bicuspid erupts, especially if the second molar erupts ahead of the second bicuspid. If the tooth is lost before the eruption of the first permanent molar, an intra-alveolar space maintainer is inserted. Otherwise plans must be made to use a form of space regainer as the first molar erupts.

(b) If any deciduous first molar is lost before the eruption of the permanent molars and incisors, a space maintainer is inserted. In borderline crowding cases with slight crowding (up to 1.5 mm.) among the permanent incisors of the mandible or maxilla, space is maintained even after the eruption of these teeth. On the other hand, where there is considerable crowding (greater than 3.0 mm.) among the permanent incisors, an orthodontic consultation is indicated before a

space maintainer is inserted as serial extractions may be necessary.

(c) Loss of deciduous cuspids may occur in the lower, the upper or both jaws:

1. Mandibular cuspids. — If muscular imbalance induces a lingual collapse of the dental arch as found among children with deleterious habits and in maxillary protrusion cases, a space maintainer should be inserted.

2. Maxillary cuspids. — Space is maintained only where there are tendencies toward mandibular prognathism. This will prevent lingual collapse of the upper anterior segment.

3. Mandibular and maxillary cuspids. — If a Class I relationship presents with up to 2.5 mm. of vertical overbite and horizontal overjet, 3 mm. or more crowding per quadrant, and one or two of the deciduous cuspids prematurely lost as the permanent lateral incisors erupt, it is necessary to remove the other deciduous cuspids in order to prevent displacement of the centre line. Treatment will probably begin with serial extractions. Children should be referred for consultation when deciduous cuspids are lost prematurely in Class I relationships with deep overbites, in Class II and in Class III malocclusions.

LOSS OF PERMANENT TEETH

When a patient presents with premature loss of permanent teeth we have two alternatives: (1) artificial replacement if no crowding is present, or (2) with considerable crowding, additional teeth may be removed and orthodontic treatment instituted.

In any case, ideal treatment can be initiated by consultation with an orthodontist as many variations of malocclusion result from the loss of permanent teeth.

✓ OVER-RETENTION OF DECIDUOUS TEETH

Over-retention of deciduous teeth results in interference with normal eruption of successional teeth. Therefore they should be removed. This is particularly

true of incisors, cuspids and bicuspid. When the labial prominence of the permanent maxillary cuspids cannot be palpated at the dental age of eight and a half years, a radiographic check of the degree of resorption of the deciduous cuspid and position of the permanent cuspid should be performed. If the permanent cuspid is being deflected lingually, the deciduous cuspid should be removed. The dental age varies in relation to the chronological age and therefore deciduous teeth should not be removed on the basis of chronological age alone.

ANKYLOSED TEETH

Care must be taken to have these teeth removed before they are completely submerged, or trapped under the mesial contact area of the first permanent molar, or when there is radiographic evidence that the permanent successor is being displaced.

SUPERNUMERARY TEETH

Generally these teeth have a hereditary background and the most common site is the maxillary permanent incisor area. Supernumerary teeth should be removed at the approximate age of seven to eight years when the roots of the permanent incisors are about half formed. Care should be taken to avoid disturbance of the permanent teeth as their eruption may be severely retarded.

ECTOPIC ERUPTION OF FIRST PERMANENT MOLARS

In many cases this is a sign of inadequate arch length. The condition is most commonly found in the maxillary first permanent molar area. When observed early, a copper band can be placed to provide a smooth surface guide plane. Separating wire may be placed and by its adjustment the first molar may be forced distally. Disking of the distal surface of the second deciduous molar can be car-

ried out gingivally to the widest portion of the tooth.

SPACED MAXILLARY CENTRAL INCISORS

One defect of most frequent concern to patients is a diastema between the maxillary incisors. Many practitioners mistakenly attribute this condition solely to an enlarged fraenum labii. This is not so. A diastema may occur in the course of normal growth. Other conditions which may be responsible (in order of importance) are: imperfect fusion at the midline of the premaxilla, an enlarged or malposed fraenum labii, missing lateral incisors, supernumerary teeth, small teeth in relation to the size of the jaws, and various combinations of these factors.

Treatment should therefore involve removal of the aetiological factor or factors.

Imperfect fusion at the midline of the premaxilla and an enlarged or malposed fraenum labii are treated by surgical excision after the teeth have been brought together and maintained with an appliance.

Patients presenting missing lateral incisors and with sufficient arch length require an artificial replacement. If arch length is insufficient, orthodontic treatment is indicated followed by reshaping of the cuspid crown to resemble the lateral incisor crown.

In patients with small teeth, improvement may be effected where desirable by the placement of jacket crowns on the incisors, or by orthodontic therapy designed to move the upper teeth toward the midline, thereby closing the spaces. This is followed by placement of mesial inlays in the first or second bicuspid for purposes of retention.

CONGENITALLY MISSING TEETH

Missing teeth constitute a clinical problem more frequently than supernumerary teeth. A consultation is invariably required. The teeth most often affected (in order of frequency) are maxillary lateral incisors, maxillary and mandibular third

molars, mandibular second bicuspid, maxillary second bicuspid, and mandibular central incisors. Any tooth may be missing, though the first molars and cuspids are only rarely absent.

Treatment depends on the number of teeth missing and on the arch length. If shortage of arch length exists, space can be closed. On the other hand, if the dental arches have good alignment and sufficient space, a deciduous tooth may be left in place. Later, when the deciduous tooth is shed, the missing permanent tooth or teeth are replaced with a prosthesis.

ANTERIOR CROSS-BITE

The timing of treatment in an anterior cross-bite depends upon whether the aetiology is dental, functional, skeletal, or a combination of these factors in varying degrees.

Dental Anterior Cross-bites.—There is generally no family history of the condition; the profile is good in the rest position and in occlusion; there may be some anterior crowding (the maxillary lateral incisors may be deflected lingually because of crowding); the closure pattern of the mandible may be affected; the number of teeth generally involved is less than four; good proportion exists between the maxilla and mandible; molar and cuspid relationship is normal; the patient can bite end to end; and considerable vertical overbite may be present.

The treatment involves the movement of the tooth or teeth from the linguoversion to their normal position if sufficient space is present. If one tooth is involved, a regular anterior metal crown can be reversed labio-lingually to function as an inclined plane. If more than one tooth is involved, an upper palatal plastic appliance is used with hidden springs lingual to the affected teeth. Acrylic resin covers the occlusal portion of upper buccal segments opening the bite just enough to free the anterior teeth and at the same time preventing further eruption of the posterior teeth, thereby maintaining the over-

bite for purposes of retention. Timing of treatment is governed by patient co-operation and therefore can vary from three to eight years of age. If the condition is complicated by considerable crowding, it is best to refer the patient for an orthodontic consultation.

Functional Anterior Cross-bites.—There is usually no family history of the condition. It is characterized by good profile in the rest position and a prominent lower lip and chin when in occlusal contact; the patient may have a history of enlarged tonsils and adenoids; interfering occlusal contacts may be present—generally involving the four deciduous cuspids; the mandible moves forward upon closure; any number of teeth may be involved; good proportion exists between the mandible and maxilla; the overbite is moderate; molar and cuspid relationship is Class I while at rest and Class III when in occlusal contact.

Following the eruption of the eight deciduous incisors, some children thrust the mandible forward so that their gum pads come into contact. Where a familial Class III tendency is present, these habits should be closely observed so that as the buccal segments erupt, the mandible will begin to occlude in the proper relationship. If occlusal interferences bring about an anterior crossbite, the mandibular incisors should be forced lingually and the maxillary incisors labially with intermittent finger pressure. Unfortunately these children are rarely seen at such an early age.

The patient is referred to the family physician for a nose and throat examination if difficulty is experienced in nasal breathing. Occlusal interferences are removed—the four deciduous cuspids and other teeth involved are equilibrated just out of contact, and if any upper teeth are in linguoversion, appliance therapy as prescribed for dental anterior cross-bite is useful. Treatment should commence as soon as the defect is observed, especially before eruption of the permanent incisors occurs.

Skeletal Anterior Cross-bites.—This condition is characterized by a family history of previous maternal or paternal occurrence; there is a prognathic appearance in the rest position and in occlusal contact; the mandibular teeth are well aligned but may be spaced; the cross-bite may extend from the first molar of one side to the first molar of the opposite side; there is disproportion between the maxilla and mandible, with a Class-III molar and cuspid relationship in the rest position and in occlusal contact; the over-bite is minimal, and in some cases an actual open bite exists.

These cases should always be referred to an orthodontist. Treatment will depend on the severity of the condition. If slight to moderate prognathism exists one tries to compromise by aligning the teeth to balance with the particular jaw relationship. If, on the other hand, the condition is severe, treatment is postponed until the patient is 16-20 years old, by which time growth is almost completed. One of several surgical procedures can be carried out thereafter by an oral surgeon to improve jaw relationship.

POSTERIOR CROSS-BITE

Many posterior cross-bites are the result of environmental influences. Characteristically, the maxillary arch is lingual or buccal to the lower arch. These conditions can involve any number of teeth and they may be unilateral or bilateral.

Dental Posterior Cross-bites.—These are associated with a history of sucking, mouth breathing, or posture habit; any number of teeth can be involved; good balance exists between the mandible and maxilla; there is an abnormal mandibular closure pattern. In many of these cases the deformity is the result of a bilateral contraction of the maxilla or mandible with a mandibular shift to a convenience bite indicated by the deviation of the centre line.

Treatment should be initiated at approximately seven years dental age. Some

patients may be treated earlier (in the deciduous dentition) depending upon the degree of co-operation.

Treatment should be directed at:

1. Elimination of the potentiating habit or habits.
2. Correction of the malocclusion.
3. Occlusal equilibration.
4. Restoration of normal muscle function, if necessary.

One or two teeth in cross-bite relationship, regardless of whether the maxillary teeth are lingual or buccal, can best be treated by banding the teeth involved and using size 00 cross elastics. Bands should be well fitted so that their retention is not totally dependent on cement.

When a full buccal segment of maxillary teeth is in unilateral or bilateral cross-bite relationship, an upper lingual arch wire with auxiliary springs is ideal for maxillary expansion. The maxillary dental arch is over-expanded approximately 1.5 mm., and retained with the same lingual arch wire for approximately three months. The dentition is then balanced by occlusal equilibration.

An attempt to correct a posterior cross-bite or contracted maxillary arch by means of a lower inclined plane generally results in failure.

Treatment of full segment posterior cross-bite, where maxillary teeth are unilaterally or bilaterally buccal to the lower arch, does not respond as readily to expansion of the mandibular arch. This condition may be associated with varying degrees of maxillary protrusion, with disproportion between the maxilla and mandible in terms of length and width. These cases should be referred to an orthodontist.

Skeletal Posterior Cross-bites.—There are two variations of this condition. In one instance, the maxilla is considerably narrower than the mandible. In the other, the mandibular arch is completely lingual to the maxillary arch.

(a) Maxilla narrow in relation to mandible. — These cases are characterized by

a family history, exemplified by a Class III relationship (as in mandibular prognathism) or a cleft palate; the profile is prognathic in the rest position and in occlusal contact; the cross-bite can be unilateral or bilateral, and it generally extends anteriorly from the first permanent molars; there may be a vertical open bite; and definite disproportion in width between the maxilla and the mandible is characteristic.

(b) Posterior cross-bites, where the mandibular arch is completely lingual to the maxillary arch. — This condition is rare. These cases may have a family history; a maxillary protrusion may exist with disproportion between the maxilla and the mandible; and poor lip posture or deep overbite and the cross-bite are generally associated with all the teeth.

Treatment of both variations is complicated and all cases should be referred to an orthodontist.

MAXILLARY PROTRUSION

Many children afflicted with this group of malocclusions cause considerable concern to their parents because of the disfigurement. Most of these cases are difficult to treat and the practitioner should consider only those that have a minor dental and functional aetiology.

Dental Class II Division 1 Protrusions.—These cases are generally associated with a mouthbreathing or a sucking habit that has stopped, or is still active; any number of teeth can be involved—cuspids, molars, or both; the defect may be unilateral or bilateral; spaced maxillary incisors and mandibular incisors well aligned or tipped lingually are characteristic; the chin is well developed, though posterior to its customary position, and a protrusive profile is present.

Treatment is initiated as soon as sufficient co-operation can be gained to eliminate the causative habit and follow treatment instructions. Treatment comprises:

1. Elimination of the habit or habits.
2. Correction of the malocclusion by means of headgear or a monoblock appliance.
3. Occlusal equilibration of any premature contacts.
4. Restoration of normal muscle function (lip closure, upper lip exercise and proper swallowing habits).

Attempts at "jumping the bite" with an upper inclined plane are in most cases unsatisfactory or the results are just temporary.

There exists another group of dental Class II malocclusion cases which is characterized by normal alignment of the upper and lower anterior teeth with a Class II molar relationship. These result from premature loss of maxillary deciduous molars and exhibit crowding or complete lack of room for the second bicuspid tooth. Care should be exercised in differentiating the foregoing dental Class II cases from those of Class II Division 2 which have a hereditary aetiology and are characterized by a molar and cuspid Class II relationship, the maxillary lateral incisors in labioversion and a deep overbite.

Treatment in these cases of dental aetiology involves the distal movement of the first molars. These teeth are banded and moved distally with the aid of headgear or acrylic space regainers. They are retained long enough for the buccal segments to erupt fully into occlusal contact relationship.

Functional Class II Malocclusions.—This group of malocclusions is characterized by Class I relationship of the buccal segments while in the rest position, and Class II relationship while in occlusal contact; all teeth are involved; good axial inclination of most teeth is present; good balance exists between the mandible and maxilla; and there may be a history of a deleterious habit such as finger sucking or mouth breathing, etc.

Rarely is the functional factor the sole potentiating cause. Usually functional and dental, functional and skeletal, or all three factors combined produce this deformity.

Treatment is similar to that of dental Class II malocclusion:

1. Removal of the aetiological factor or factors.
2. Correction of the malocclusion if present.
3. Occlusal equilibration.
4. Restoration of normal muscle function.

Skeletal Class II Maxillary Protrusion.—This condition is characterized by a maternal or paternal family history. The profile presents varying degrees of maxillary protrusion. If a deleterious habit is associated with the disproportion between the mandible and maxilla, the profile presents a very severe maxillary protrusion.

These cases should also be referred to an orthodontist.

DEEP OVERBITE

If the extent of vertical overlap of the teeth interferes with masticatory function, the condition should be considered abnormal and treatment recommended. Deep overbite itself does not necessarily cause abnormal function. In certain forms of mandibular function, varying degrees of overjet and cusp height compensate to some extent for the degree of overbite.

Deep overbite may result from dental, skeletal, or environmental factors such as short ramus height, over-eruption of maxillary incisors, lack of eruption of molars, tipping of teeth in the buccal segments thereby reducing posterior vertical height, increase in the incisal angle between maxillary and mandibular incisors, excessive length of maxillary and mandibular incisor crowns, disproportion between the mesio-distal width of the maxillary and mandibular incisors, and abnormal habits.

It is not difficult to see that there exists as great an assortment of treatment methods and timing as there are aetiological factors. Unless one can determine what factors are involved, the chances of a permanent result are poor. This is particularly true if all cases of deep overbite are treated by the use of a bite plane.

SERIAL EXTRACTION

We are often confronted with the problem of harmony between tooth and bone size. The evaluation of tooth size in growing children is rather subjective, though in some cases there is no doubt that there will be a disproportion between tooth tissues and arch dimension. During the mixed dentition stage, the following formulae are helpful in estimating the mesio-distal width of the unerupted cuspid and first and second bicuspid:

If x is the sum of the mesio-distal widths of the four mandibular incisors, the required space y for the maxillary cuspid and bicuspids is computed as:

$$\frac{x}{2} + 11 = y \text{ millimetres}$$

and the space z for the mandibular cuspid and bicuspids is computed as:

$$\frac{x}{2} + 10 \text{ or } y - 1 = z \text{ millimetres}$$

The actual space available in the quadrants is measured from the distal surface of the lateral incisor to the mesial surface of the first permanent molar. Subtracting the estimated space from the available space will indicate whether or not crowding may occur. Where lack of space exceeds three millimetres per quadrant, serial extractions may be contemplated provided the presence of all the permanent teeth can be radiographically demonstrated, good facial balance exists, horizontal overjet does not exceed three millimetres, vertical overbite does not exceed one third of the clinical crown, and the remaining teeth have a good sound prognosis. The aim of this procedure is to establish harmony among the erupted teeth and to prepare for the eruption of the permanent teeth.

Serial extraction is an interceptive procedure which must be practised with caution and ideally under the direction of an orthodontist.¹

FUNCTIONAL AETIOLOGICAL FACTORS

Occlusal interferences which disrupt normal muscle function have been previously described. The other significant factors are habits such as thumb and finger sucking, lip and tongue sucking, tongue thrusting and mouth breathing.

Sucking Habits.—Recent studies² have shown that a significantly higher prevalence of malocclusion exists in children with sucking habits than those without the habits. These habits bring about mesial displacement and narrowing of the maxillary arch, and, to a lesser degree, narrowing of the mandibular arch. This change in the facial morphology gives rise to secondary habits such as tongue thrusting, open lips, and mouth breathing, all of which further aggravate the primary condition. In many instances these secondary habits are more difficult to eliminate than the original thumb and finger sucking.

In children where the habit was arrested before six years of age, the prevalence of malocclusion was no greater than in children who had no history of a sucking habit.

Careful attention to feeding and weaning routines may prevent or cure thumb sucking.^{3,4} This fact should be more forcefully impressed on family physicians, paediatricians and other health workers. We have found that the prevalence of sucking habits is reduced by 50 per cent in children using a pacifier.²

The management of deleterious sucking habits poses serious psychological problems. The most sensible method of controlling sucking habits is to establish a correct relationship between the child, the parents, and the dentist, based on patience, friendliness, and careful redirection of the sucking urge. If the child can understand the problem clearly and wishes to stop the habit but cannot, consideration may be given to the use of a mechanical deterrent. It is explained to the parent that the appliance will take the minor role in relation to that of the child. To

the child we explain that we are going to fasten a reminder to his teeth only if he wants to stop sucking his thumb. If the habit is discouraged without substitution of another habit, one may assume that motivation to stop the habit came from the child.

On the other hand, failure to arrest the habit even though the appliance has been worn, may stem from:

(a) Emotional instability in the child (infantile behaviour).

(b) A punitive approach taken by the parent and/or a dentist.

In this event the child should be referred to a clinical psychologist or psychiatrist.

Tongue Thrusting.—Myotherapy is no substitute for mechanical appliances, nor can appliances alone assure a satisfactory permanent result. For this reason both measures must be used. Normal tongue movements are dependent upon synchronous function of all its muscles.

Patient co-operation during the treatment of these difficult tongue habits is most important. The two main groups of tongue habits are the residual tongue thrust and the infantile swallowing pattern.

(a) Residual tongue thrust is characterized by an open bite present only in the incisor area. Because this habit is a residual effect of the various sucking habits, mouth breathing, and chronic tonsillitis, the ideal is to eliminate these aetiological factors as early as possible before the reflex is well established. Swallowing exercises, with the tip of the tongue held lingual to the maxillary central incisor roots, the teeth together and no movement of the lips, are helpful. All the swallowing has to be carried out in this sequence.

(b) Infantile swallowing pattern is characterized by a stronger than normal contraction of the lip and the mentalis muscle which ordinarily prevents the tongue from protruding during swallowing. Treatment involves correction of the swallowing habit as described by Straub.⁵

This group of conditions is difficult to treat and should be referred to an orthodontist or speech therapist. The use of appliances alone is only palliative in both groups.

Facial type (excess vertical height) is an important skeletal characteristic to consider before initiating treatment for an open bite accompanying tongue thrust. A bilateral open bite anterior to the most posterior teeth is present in many of these skeletal cases and the tongue thrust is only secondary.

Mouth Breathing.—This may be the result of enlarged adenoids and/or tonsils, allergies, open lips following sucking habits, bony growth in the nose, nasal catarrh, or the infantile pattern of open lips.

Prolonged mouth breathing results in a high narrow palate, maxillary protrusion, gingivitis in the maxillary incisor area, and secondary habits such as tongue thrusting.

Treatment involves:

1. Elimination of the cause, when possible.
2. Correction of malocclusion. In the early stages a labial shield may be sufficient.
3. Occlusal equilibration.
4. Restoration of muscle function—upper lip exercises and swallowing exercises.

SUMMARY

Since the destiny of the developing dentition rests with the family dentist, the possible management of a deformity should be discussed with the parent. Such discussion creates a keener interest in the dental health of the child and a recognition that there is considerably more to satisfactory dental care than the detection and restoration of cavities.

Knowledge of the aetiological factors responsible for the development of malocclusion is a prerequisite to any attempt to prevent, intercept or correct a malocclusion.

While many orthodontists rely upon cephalometric radiographs as an aid to diagnosis, the family dentist may obtain considerable information from a careful observation of tooth relationship, lips, and profile in the rest position and in occlusal contact.

The advice of an orthodontist should be sought whenever a question concerning treatment arises in a practitioner's mind. Referral for orthodontic consultation should be carried out early. It should be explained to the parent that treatment will not necessarily be initiated at once; that an observation period is important so that the orthodontist may select the ideal time for treatment.

It is appreciated that dentists in areas where there is no orthodontist have often had to render services for which they have had little training. As more orthodontists become available, the family dentist should be relieved of the burden of having to treat complex malocclusions so that he may increasingly devote his efforts to the preventive and interceptive procedures here described.

RÉSUMÉ

L'auteur classe les malocclusions, quant à leur origine, en trois catégories: dentaires, fonctionnelles, osseuses. Les malocclusions dentaires suivantes répondent favorablement aux traitements préventifs: celles qui résultent de la malposition d'une dent unique, de la perte prématurée de dents primaires ou permanentes, de la rétention prolongée de dents primaires, de la présence de dents surnuméraires, de l'éruption ectopique des premières molaires supérieures, de l'anormalité du frein labial supérieur et de l'articulation croisée antérieure ou postérieure; quelques cas de classe II et de classe III répondent aussi favorablement aux traitements de prévention. Ces traitements de prévention consistent uniquement en des mesures prises pour conserver normale l'occlusion. Ils comprennent toutes les opérations de dentisterie préventive et de dentisterie res-

taurative; elle comprend aussi le traitement des affections gingivales. Les mesures spécifiques d'orthodontie préventive consistent dans la confection d'appareils pour maintenir la position des dents, l'extraction des dents primaires dont l'époque d'élimination est passée, l'extraction des dents surnuméraires, le contrôle de l'éruption ectopique des premières molaires supérieures, l'équilibration de l'occlusion, la ré-éducation d'habitudes vicieuses de la langue, de la lèvre, la suppression de mauvaises façons d'avaler ou de l'habitude de sucer les doigts.

Les malocclusions fonctionnelles comprennent la malfonction de la musculature de la face et de la mandibule provenant du suçage du pouce ou d'autres doigts, le mordillement de la lèvre inférieure, la respiration par la bouche, etc.; il se produit alors des interférences dans l'occlusion, des façons anormales de fermer la bouche, des réflexes spasmodiques, tels que le plissement de la lèvre, de fausses contractions des muscles, comme la projection de la langue au cours de la déglutition, et des occlusions croisées postérieures.

Les malocclusions osseuses résultent d'une croissance asymétrique des os de la

face; elles peuvent être congénitales ou une manifestation grave d'une maladie constitutionnelle. Ce groupe comprend les malocclusions caractérisées par un entassement des dents ou une disproportion entre le volume des dents et celui de l'os. Le traitement de ce genre de malocclusion est difficile et requiert les services d'une orthodontiste. L'auteur décrit, de plus, une grande variété de malocclusions découvertes par l'omnipraticien; il les classifie, en se basant sur leur origine, dans les trois groupes mentionnés plus haut; il en souligne la nature et mentionne les époques où doivent se donner les traitements préventifs; l'omnipraticien peut prodiguer des soins qui peuvent faire avorter la majorité des malocclusions dentaires et fonctionnelles.

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Present Status of Dental Caries Preventive Measures

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Dentistry in North America has achieved high standards; every day new techniques and new materials are brought out and subjected to clinical trial so that in the end, the patient may be treated more adequately. Is this really the best way to

overcome the ravages of a disease? Statistics reveal a dramatic disproportion between the dental cases treated and the ones that are not treated because of a lack of manpower, of money, or of education.

The real answer seems to be prevention. A number of definitions of the word

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TABLE 1 Factors influencing the occurrence of dental caries.

1. Cariogenic factors	{	Bacteria involved	{	Formative phase	{	In water supplies
		Formation of acid		Eruption		In topical application
		Decalcification		Permeability		In food
		Retention and clearance of acid		Remineralization		In tablets
2. Caries inhibiting factors	{	The tooth itself	{	Chemical: fluorides	{	Saliva and caries activity tests
		Environmental influences		Individual susceptibility		Tooth morphology
				Anatomical		
				Nutritional and Dietary		Physical character
						Carbohydrates
						Nutrition counselling
	Mechanical adjuncts	Dentifrices, including fluoride dentifrices				
		Toothbrushing				
		Mouthwashes				
		Prophylaxis				

prevention have been given. We prefer the one given in Muhler's textbook, *Preventive Dentistry*.¹ In its broadest sense it "refers to all the activities and methods which have or promise to have the effect of preventing dental ills from occurring".

A considerable amount of research has been done in various aspects of preventive dentistry and the results are extremely promising. But the results, it seems, are in many cases like the detached pieces of a giant puzzle. Continued research may, some day, establish a link between all these bits of information. Since the scope of this article is restricted, only the problem of dental caries will be dealt with.

In any discussion of dental caries, the two major aspects to be taken into consideration are cariogenic and caries inhibiting factors.

CARIOGENIC FACTORS

Bacteria Involved.—Classification of the micro-organisms involved on a basis of their role in forming the carious lesion, serves a useful purpose in the discussion that follows.

1. The acidogenic micro-organisms which include *lactobacillus acidophilus* and certain strains of streptococci, are thought to be responsible for the decalcification of enamel.

2. The proteolytic micro-organisms, are probably responsible for removal of the organic matrix after decalcification has been achieved.

3. The third group includes the organisms responsible for the formation of plaques on the surfaces of teeth. Though they do not seem to play a primary role in the production of dental caries, they do

serve as an anchoring device for acidogenic bacteria.

Formation of Acid.—Production of acid requires the action of an enzyme system, provided mainly by bacteria, on a suitable substrate derived from carbohydrates.

Decalcification.—The process of decalcification depends on two factors: the degree of acidity and the length of time the acid is in contact with the tooth. It is known that an acid at an approximate pH of 5.0 will decalcify the inorganic structure of the tooth. However, the length of time this acid must remain on the tooth to cause decalcification is not known.

Retention and Clearance of Acid.—The retention or clearance of acid is dependent on the following factors: the dental plaque, the anatomy of the tooth, the position of the tooth in the dental arch and the presence of dental appliances.

CARIES INHIBITING FACTORS

The Tooth Itself.—Caries inhibiting factors operating within the tooth itself are classified into four groups for convenience.

1. *Formative Phase.*—There is a considerable time lapse between the initiation of tooth development and the appearance of the tooth in the mouth; during this period the body's metabolism and its hereditary background influence tooth development.

The precise influence of metabolism and heredity upon human teeth during their formative stage is still uncertain. Histological observations in humans reported by Schour and Massler² demonstrate the fact that at different times in the life of the individual, the quality of the tooth tissue varies. The degree of calcification may later influence its degree of resistance.

Furthermore, animal experiments seem to indicate that variations in the animal's metabolism or hereditary background af-

fect its resistance to dental caries. How these factors relate to an individual patient's resistance to dental caries is not fully understood.

2. *Eruption and the Change of Environment.*—When the teeth erupt, their environment changes completely. They come into direct contact with extrinsic factors such as food, bacteria and saliva. A factor of prime importance at this time is the resistance of the teeth towards this altered environment.

3. *Enamel Permeability.* — Extensive studies have demonstrated the possibility of ionic exchanges between the tooth and the surrounding medium. This phenomenon was first demonstrated by the use of dyes such as trypaflavine which are capable of diffusion through the tooth. It was subsequently shown with unlabelled elements, that inorganic elements can penetrate the intact enamel surface and that ionic exchanges occur. More recently, the use of radioisotopes has confirmed these earlier observations.

Can the permeability of the tooth tissues be reduced? This question has resulted in investigations into the possibility of reducing the permeability of the outer layers of enamel, or altering the environment around the teeth, so as to reduce its noxious influence to a minimum.

4. *Remineralization.* — Under certain circumstances, remineralization has been shown to take place under enamel lesions. Examples occur in cases of slowly progressing caries, when acid production on the surface of the tooth is minimal, and in cases of arrested caries. This is accomplished within the tooth through a shifting of minerals freed during the demineralization phase, or possibly an ionic transfer occurs from the saliva. The process has been described in detail by Méz¹³ and others.

Environmental Influences.—Environmental influences affecting susceptibility of the teeth to dental caries are broadly divisible into five categories: chemical,

physiological, anatomical, nutritional and mechanical.

1. Fluoride in Communal Water.—The effects of fluoride ingestion and of topical application of fluorides are pertinent.

The realization that fluorides could alter the effects of the environment on the teeth resulted in large scale studies of the effects of fluoridating communal water supplies. A concentration of one part of fluoride in one million parts of water was found to be optional for maximum protection.

In 1945, three clinical studies were undertaken in Ontario, Michigan and New York. The cities involved in Ontario were Stratford, which has approximately 1.2 p.p.m. of naturally occurring fluoride in its water supply; Brantford, which added approximately 1.2 p.p.m. to its water supply; and Sarnia, which had no fluoride in its water supply and served as control.

The other two studies were made in the state of New York and in the state of Michigan. In the former, Newburgh added approximately 1 p.p.m. fluoride to its communal water supply, while Kingston was chosen as control. In Michigan, Grand Rapids was selected for fluoridation and Muskegon was used as a control.

Other large scale studies have since been undertaken, and all reveal approximately a 50 to 60 per cent reduction in the rate of dental caries.

Well controlled studies reveal no adverse effects from the addition of 1 p.p.m. of sodium fluoride to community water supplies.

The mode of action of fluorides has not yet been established. One hypothesis is that a fluorapatite molecule is formed in or on the surface of the enamel, rendering it more resistant to the action of acids produced by bacteria. A second theory is that fluorides have an inhibitory effect on the enzymatic systems of the bacteria that are associated with dental caries.

2. Topical Application of Fluorides.—Fluorides may be topically applied to the teeth in areas where fluoridation of the communal water supply is not in effect.

The technique is simple. After a thorough prophylaxis, the teeth are isolated and then dried with air; fluoride, either sodium or stannous, is then generously applied with a cotton swab and the solution is left to dry for about four minutes after which time the isolating medium (cotton rolls or rubber dam) is removed.

With sodium fluoride, four full-mouth applications, at intervals of from one to two weeks, seem to give the best results. With stannous fluoride, one application per year seems to be sufficient. Since it has been demonstrated that young teeth are definitely more permeable than older ones, it is suggested that fluoride treatments with sodium fluoride be carried out as the teeth erupt.

The schedule might be: at three years of age, the entire deciduous dentition; at seven years of age, the first permanent molars, central incisors, and lateral incisors; at ten years of age, the bicuspid; and at thirteen years of age, the second permanent molars. This results in a substantial reduction of the amount of fresh caries.

3. Fluorides in Food and in Tablets.—The following quotation from a recent Workshop Conference on Nutrition and Preventive Dentistry⁴ is of interest:

"In respect to methods of fluoride therapy which could be used in the absence of fluoridated water it was decided that home preparation of fluoridated water for use in drinking and cooking is preferred. There is a paucity of information regarding the efficacy and safety of the addition of fluorine to other liquid and food or the effectiveness of tablets, lozenges, etc. A procedure which combined the bringing of fluoride in solution in contact with the tooth surfaces with the possible benefits of ingestion such as would be provided by fluorine in food, or sucking lozenges, would on theoretical grounds be more effective than swallowing fluorides in pills where no direct contact between fluoride and teeth would be provided."

4. Saliva.—Teeth are bathed in saliva. However, the volume of saliva varies. During the day, the flow of saliva is copious, while during sleep the flow is considerably reduced. Saliva has several

TABLE 2 Interpretation of the lactobacillus test.⁵

Number of organisms per c.c. of saliva	Symbolic designation	Degree of caries activity suggested
0-1,000	—	little or none
1,000-5,000	+	slight
5,000-10,000	++	moderate
More than 10,000	+++ or ++++	marked

physiological functions, which are dependent for their proper fulfilment on optimal circumstances.

Cleansing the tooth surfaces of bacteria and food particles is one of the functions of saliva. However, the cleansing action of saliva is not uniform; best results are achieved on those surfaces situated in the vicinity of salivary gland orifices. If, for any reason, the flow of saliva is reduced, the probability of a rise in the number of carious lesions increases. Because of the reduced flow of saliva during sleep it would seem that brushing the teeth before retiring is of importance.

Saliva is bacteriostatic, but for its bacteriostatic function to be fully effective, the action of the bacteria should be restricted to a minimum, this can be done by limiting the ingestion of fermentable carbohydrates, especially those that remain around the teeth for long periods of time.

Saliva also has a buffering capacity but if the rate of acid formation rises so rapidly that the buffering system is inhibited, dramatic increases in caries experience may ensue. Again, it is extremely important that the consumption of fermentable carbohydrates be restricted.

5. Caries Activity Tests.—Many laboratory tests have been devised to measure potential caries activity. Two of the more easily performed are the "Lactobacillus Test" and Snyder's "Colorimetric Test".

In the former, a specimen of saliva is spread on a tomato agar medium and incubated. Though it only gives a quantitative estimate of the lactobacilli, it has been demonstrated that a very high correlation exists between the lactobacillus

count and the rate at which new lesions develop. The results are usually expressed as shown in Table 2.⁵

The Snyder test is a measure of the acid-producing potential of the saliva. A saliva sample is mixed with a liquefied medium of brom-cresol green dextrose agar and incubated. The medium is then examined every 24 hours for colour changes. The interpretation is as shown in Table 3.⁶

Because of its simplicity the Snyder test can be easily performed in dental offices. However, these services are available at a number of university centres either free of charge, or at a low nominal fee.

6. Individual Susceptibility. — It is a well-known fact that caries susceptibility differs from person to person, and in the same individual at different times. This means that a serious evaluation of each patient has to be made. Thus, treatment plans differ greatly for the individual who develops one new carious lesion every two years, for the person who develops ten new lesions in one year, and for the unfortunate patient who has true rampant caries.

For the former, routine instructions may suffice, while for the latter, intensive preventive care is indicated along the following lines: dental health education, fluoride therapy, toothbrushing technique, non-cariogenic diet, saliva tests and frequent examinations.

7. Tooth Morphology.—Tooth morphology should be mentioned as a predisposing cause of dental caries. Thus caries

TABLE 3 Interpretation of the Snyder test.⁶

Positive colour change in: (greenish blue to yellow)	Symbolic designation	Diagnosis
Less than 24 hours,	++++	very high susceptibility
Over 24 and less than 36 hours	+++	high susceptibility
Over 36 and less than 48 hours	++	moderate susceptibility
Over 48 and less than 72 hours	+	low susceptibility
No colour changes in 72 hours	—	low susceptibility

susceptibility and morphology should be considered jointly. For example, in a caries susceptible patient, any accentuation of the normal anatomy (deep fissures in molars, etc.) should probably be eliminated immediately, while in a caries resistant patient these features do not necessarily have to be corrected.

8. Nutritional and Dietary Influences.—There are many excellent articles in the literature dealing with the relationship between dental caries and nutrition. Therefore, the present remarks are limited to fermentable carbohydrates and to caries reducing ingredients, which may be added to the patient's diet.

The Vipeholm study,⁷ a classic of its kind, has demonstrated clearly that the physical character and quantity of carbohydrates are important. Carbohydrates ingested in a liquid form are rapidly washed away from the teeth, while solid ones like caramel or toffee, since they are removed more slowly, provide an excellent substrate for bacterial activity. If the quantity and frequency of carbohydrate consumption are increased, the results in many cases may be catastrophic. In other words, the clearance time of these foods from the mouth is important; if it is short, the effects are practically nil, but as the clearance time is prolonged there is a resultant increase in caries experience. Every time refined sugars are ingested the process illustrated in Figure 1 is repeated. The number of times fermentable carbohydrates are eaten, and not necessarily the quantity eaten, becomes an extremely important factor. Carbohydrate intake restriction is there-

fore indicated, especially between meals. The following conclusions of the Workshop Conference on Nutrition and Preventive Dentistry⁴ are pertinent:

"... Obviously, complete prohibition of carbohydrate consumption is undesirable from the standpoint of palatability, impractical economically and agriculturally impossible if we are to continue to nourish our population adequately. Since carbohydrates cannot and should not be completely eliminated from the oral cavity we need to have a great deal of information about what specific foods and under what circumstances they are most cariogenic. Therefore we must look more closely at the problem. An increasing body of information supports the observation that a reduction of food residues containing readily fermentable compounds results in reduced dental caries experience and that carbohydrate foods which are readily cleared from the oral cavity have relatively low cariogenic potentials. The real outstanding problem in this area is to define the cariogenicity of specific foods and to determine whether or not there are any materials that can be used as food additions in order to reduce the caries attack rate of these specific foods. Much has been done in this area in the past decade but we need a greatly increased rate of experimental investigation of this general subject.

"... The use of sugar substitutes such as saccharin or sodium cyclamate (*Sucaryl*) to replace sugar in confections was approved. It was decided that because their sweetness permits them to be used in place of some sugars in the diet, thereby reducing sugar intake, they may have some usefulness. However, the substitution of other sugars such as sorbitol, mannitol and lactose for ordinary food carbohydrates to serve as sources of energy was not advised, because these substitute sugars are more difficult to

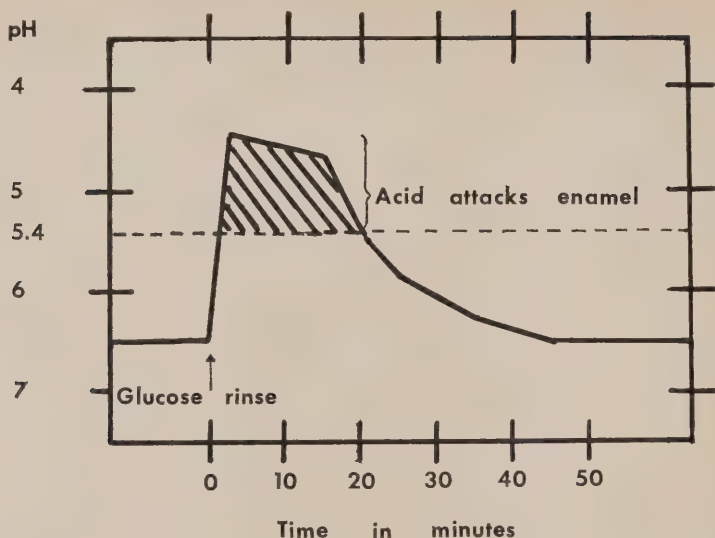


FIGURE 1 Rate of acid formation on a tooth surface following rinse with a glucose solution (after Stephan and Miller⁸).

metabolize and may even produce pathology".

The dental practitioner has an important role to play in advising his patients in matters of nutrition. Again from the Workshop Conference on Nutrition and Preventive Dentistry,⁴ the following observations are highly relevant:

"To bother with nutrition counselling at all one must be convinced that it serves a purpose or purposes. I am convinced it does, in fact, perhaps serve three purposes. First of all, the nutrition interview may be a very valuable diagnostic aid. In case of periodontal disease or rampant caries, may the nutrition, diet and or food habits of the patient be affecting his dental status? The ability to obtain a reliable dietary history and picture of food habits in general may provide valuable clues as to what is wrong in a given patient. The appraisal of the dietary status and related habits may be the best way to obtain an early clue to potential dental difficulties.

Secondly, basic to all effective and meaningful nutrition counselling is a knowledge of what the patient is already doing so that the suggested preventive of therapeutic procedures may be adapted to fit his circumstances and hence have some possibility of being followed.

Thirdly, nutrition counselling could be used as a tool in accumulating research data. Many practical research contributions could be made by dentists based on experiences in their practices if data were gathered systematically on such factors as food habits, dietary intake, conditioning factors, etc., and related to changes in dental and periodontal status. For this purpose we just need more research-minded practitioners, especially paedodontists, who raise questions and then seek the answer".

9. Dentrifrices.—During the past years dentifrices of all kinds have flooded the market. Many of them, after clinical investigation, failed to inhibit dental caries consistently. Recently, studies with a com-

mercial dentifrice incorporating stannous fluoride* have been reported. The results obtained so far have been promising enough to warrant a cautious recommendation by dental authorities. However, further studies are needed to assess long-range efficacy in reducing caries.

10. Toothbrush.—When properly used, the toothbrush is one of the best aids in maintaining good oral hygiene. The practitioner in the office has a golden opportunity to demonstrate the usefulness of the toothbrush. The child should be taught its proper use, and toothbrushing at home should be supervised by the parents.

11. Mouthwashes.—Apart from giving the impression of freshness and dislodging food particles, mouthwashes do not give any indications, at this time, of being effective in reducing caries.

12. Dental Prophylaxis. — The dental prophylaxis as performed by the dentist or dental hygienist is essential in the removal of plaques and other accumulations that routine home care cannot accomplish.

CONTROL MEASURES

If we accept the definition of prevention stated earlier, "... to prevent ills before their occurrence," then any measures undertaken after the occurrence of disease become control measures. These control measures serve to check the progress of the disease (restorations in carious teeth) or to provide replacements if the morbid condition is too far advanced (as for example a prosthesis to replace missing teeth). However, measures which theoretically are regarded as strictly preventive, may be used to advantage in conjunction with active treatment. Caries activity

tests and the intelligent restriction of carbohydrates by the patient are examples.

SUMMARY

Reviewing briefly the accomplishments of the last few years in the field of preventive dentistry, one is struck by the fact that dental caries still remains a major problem.

We have learned much from past experimental and clinical investigations. The benefits of fluorides; the improved use of foods; the better understood mechanism of demineralization and remineralization of enamel, and the better known roles of saliva are only a few examples.

If the dental profession really hopes to cope with this disease, the present knowledge we have in preventive methods must be utilized and considerably more research will have to be done.

RÉSUMÉ

La dentisterie en Amérique du Nord a atteint un haut degré de perfection. Chaque jour des nouvelles techniques et des nouveaux matériaux sont soumis à l'épreuve clinique afin d'améliorer et de faciliter les traitements. Mais est-ce vraiment la solution aux problèmes dentaires actuels?

La statistique nous révèle une disproportion marquée entre les cas traités et ceux qui ne le sont pas soit à cause d'un manque de main d'oeuvre, d'argent ou d'éducation. Il semble qu'il faille chercher la réponse dans la prévention.

Dans son sens le plus large la prévention "réfère à toutes les activités ou méthodes qui ont ou qui promettent d'avoir l'effet de prévenir les maux dentaires avant qu'ils ne se produisent."

L'article présent ne traite que de la prévention en regard de la carie dentaire. Les principaux facteurs cariogéniques et les moyens de défense contribués par les dents elles-mêmes et par l'environnement sont brièvement discutés. Parmi ces moyens de défense sont inclus le rôle

*Stannous fluoride 0.4%, calcium pyrophosphate 39%, glycerine 30%, stannous pyrophosphate 1.0%, water 24.97%, miscellaneous formulating agents 4.63%.

possible de l'hérédité et de la nutrition durant la phase formative et l'influence du fluor, de la salive, de la restriction des sucres raffinés et des agents mécaniques lorsque l'environnement est modifié, c'est à dire après l'éruption des dents.

Une distinction est établie entre les méthodes de prévention (avant l'initiation de la carie) et les méthodes de contrôle (obturations, etc. après l'initiation de la carie).

Si ce problème de la carie dentaire qui est actuellement dramatique doit être réduit à des proportions plus minimes il faut que la profession utilise tous les moyens actuels de prévention; il faut aussi qu'un montant beaucoup plus considérable de recherche soit canalisé vers cet objectif.

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The Management of Traumatic Injuries to Children's Teeth

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The telephone rings and as is often the case, the dentist half listens in on the conversation between his assistant and the unknown caller, while he completes the operation for the patient under his care. Suddenly he hears the word "accident" and knows that the next words of his assistant will be "we must see the child as soon as possible". It is impossible to determine the extent of an injury from the description given by a distraught parent, or a disturbed teacher, over the telephone. Certain injuries to teeth demand immediate attention, while still others require a waiting period before a decision can be

made as to whether or not conservative treatment will preserve the tooth.

ACUTE EMERGENCIES

Three types of injury require immediate attention. The first is the completely avulsed anterior tooth, the second is the partially avulsed anterior tooth, and the third, the fractured crown which discloses a wide pulp exposure in a tooth possessing an incompletely calcified root.

Complete Avulsion.—Much valuable time may be saved if the dental assistant enquires at once if the parent or teacher has the tooth. If the tooth is missing every effort should be made to find it. If the

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search is successful, the parent should be instructed to place the tooth in an envelope and to bring it and the child to the office. Those who have taken a course in first aid will recall that the instructor repeated time and again that the first essential point to bear in mind, in any accident, was to determine the extent of the injury, as far as was necessary for intelligent and efficient treatment. Not every avulsed tooth can be replanted with success. The blow may have been of such severity that the labial or lingual walls of the alveolus have been macerated to such an extent that there is no hope of stabilizing the tooth during the repair stage. Fortunately such an injury is not common and the majority of avulsed teeth may be successfully replanted. As soon as the child is seated in the chair we allow him to rinse his mouth with a pleasant, warm mouthwash. We examine the tissues very gently and note any evidence of a fractured alveolus. There may be some debris visible but we do not attempt to remove it at this time. A radiograph of the region is taken and processed immediately. If a camera is available in the office, this is the time to take a photographic record of the injury. While the dentist makes the initial examination, the assistant washes the tooth under a rushing flow of water, making sure that the plug is in the basin as the tooth may easily slip from the fingers and be lost. As soon as the tooth is cleansed it is wrapped in a layer of gauze and embedded in a block of plaster. When the plaster has partially set it is trimmed so that about three millimetres of the apex of the root and the lingual surface of the crown are visible.

Following an accident of this nature many children are in a highly nervous condition. A couple of teaspoons of elixir of sodium pentobarbital given in a small amount of water will make the visit a great deal easier for both patient and dentist. As for the parent, who is usually in a state of shock, especially if the accident has happened to a little girl, every effort should be made by the assistant to assure her that the child is in

competent hands. If necessary she is encouraged to go to a nearby restaurant for a cup of coffee and to return to the office a little later.

As soon as the plaster has set we resect about two millimetres from the apex of the root, open into the lingual aspect of the crown and remove the pulp from the pulp canal. One must be particularly careful to remove every portion of pulp from the crown as any which is left will surely cause unwanted discolouration. We ream and file the root canal to a maximum diameter of at least a No. 6 file (Kerr numbering system) or a No. 50 file (Star numbering system) using a syringe to wash the walls of the root canal with hydrogen peroxide alternated with sodium hypochlorite solution. We dry the canal with paper points and fit the largest possible size of silver point so that it extends beyond the severed apex. We coat the silver cone with a root canal sealer cement and lock it to place in the root canal. Cutting the silver cone flush with the apex, we burnish it smooth with a gold burnisher. The coronal end of the cone is cut so that it fills the pulp chamber. By following this manner of root canal obliteration, instead of using gutta percha, the silver point will act as a stabilizing implant if and when root resorption occurs, and the crown will be held in place many months longer than would otherwise be the case. By the time the tooth is ready for replanting the sedative will have had a calming influence upon the young patient and the anaesthetic may be administered without difficulty. The administration of a local anaesthetic in the mouth of a child requires some finesse, but a little thought at this point may make a great difference in the manner in which future injections are received. As a surface anaesthetic lidocaine ointment has the advantage of staying in the selected region and not running over adjacent tissues. This localization may be further enhanced by covering the ointment with a cotton roll and having the child close the lips for a full three minutes. The injection is made with a fine gauge needle. A 28

gauge needle will slip into the tissues with the slightest pressure, and negligible discomfort, especially if the finger is pressed firmly against the tissues just above the point of insertion. No matter how sharp a heavy gauge needle may be, it will give unnecessary pain to a little child and this should be avoided. We now examine the tissues for fragments of bone or particles of debris, removing all the blood clot and thoroughly syringing out the socket. The tooth is removed from the plaster and rinsed under flowing water. We examine the root closely for any bit of plaster which may have adhered, and when satisfied that the root is clean, we insert the tooth into the socket. Because of the resected apex there will be no back pressure and the tooth will return to its correct position in the alveolus. We suture the tissue firmly about the neck of the tooth and then cover the crown of the tooth with a layer of gauze or tinfoil. An impression is taken with hydrocolloid or similar impression material and a splint of the bite plane type is made with a rigid strap over the incisal edge of the tooth. The great advantage of this type of splint, as compared to the fixed splint, is that it may be removed with little effort to examine the stability of the tooth. Once the tooth loses abnormal mobility there is no need to retain the splint. However, if it is not convenient to make up such a splint, ligature wires or orthodontic bands and an edgewise bar may be used with success. The relief displayed on the face of the parent when she sees her child with the replaced tooth is a rich reward for a trying hour, but at the same time the dentist may be fostering the seeds of future condemnation unless he makes a very careful explanation to the parent at this time. The parent must be made to understand that this operation is a treatment phase only. She must understand that in the vast majority of replantations the root will resorb, that the tooth is rarely retained for more than seven years, and that it may be lost much sooner. However, and this point is important, it should be pointed out that the tooth provides an excellent space main-

tainer during a period of rapid growth, and that the avoidance of a partial denture in the mouth reduces the susceptibility to rampant caries.

Subluxation.—The second accident which requires immediate attention is the partially avulsed tooth. Stabilization is the problem and this is usually achieved by wire ligatures or a combination of ligatures and bands. The sight of a tooth literally hanging by a shred of tissue is a most distressing experience. But the power of the body to repair is a constant source of amazement and the dentist should resist the urge to use the forceps as a solution to the problem. It should be borne in mind that in the absence of any acute clinical symptoms no decision concerning the vitality of the pulp is valid until eight weeks have elapsed. The policy should be to wait and observe.

Coronal Fracture with Pulp Exposure.—The third type of accident which requires immediate attention is the wide pulp exposure in the fractured crown of a tooth having a root which is not yet completely calcified. A little thought will prove that the long-term prognosis for retention of such a tooth will be greatly enhanced if the pulp is permitted to continue its work of calcification in the root. The pulpotomy operation is designed to maintain the pulp tissue within the root in a state of health until the root is fully formed, and every dentist should have calcium hydroxide C.P. in his cabinet in anticipation of such an emergency. Once again the dentist is dealing with a child who is under nervous strain, but unlike the replantation operation there is rarely time for an oral sedative to act. Therefore, the region is anaesthetised as quickly as possible. We coat the mucosa with a surface anaesthetic and cover it with a roll of cotton to reduce dilution. It is important that a very fine needle be used. Infiltration alone is not sufficient and the primary anaesthesia should be supplemented by the intraseptal or peridental injection. One per cent pain is just as severe to a little child as fifty per cent. There must be no pain

whatever. We place the rubber dam in position and wash the operative field with untinted tincture of an organic mercurial or ammonium chloride solution.* The roof of the pulp chamber is removed with a slowly revolving bur. We do not use a high-speed air turbine as any heat developed may endanger the injured pulp. A new, large round bur is placed in the handpiece and flamed several times with alcohol. The bur is slowly revolved to sever the pulp at the constriction within the tooth where the pulp enters the root canal. As a result of the supplementary anaesthesia there will be relatively little haemorrhage. A portion of calcium hydroxide is mixed with sterile water or with some remaining local anaesthetic solution on a sterile glass slab. The mix should have the consistency of heavy whipped cream. We carry the paste to the cut pulp on a sterile ball burnisher or other suitable instrument, and build up a bank of several millimetres thickness. Excess moisture is absorbed by touching the blunt end of a large paper point to the mass. The calcium hydroxide is covered with a layer of crown and bridge cement. As this operation is usually performed in the office with little advance warning, there is usually little time for anything other than the pulpotomy operation. It should be understood that there is absolutely no contra-indication for the placement of the final restoration after a pulpotomy operation. Indeed, there seems little doubt that failure of some otherwise successful pulpotomy operations is simply due to the fracture of cement along the cavity margin, which allows infection to penetrate the pulp. If the final restoration cannot be placed on the day of the operation, a definite appointment is made within a few days for that restoration. Again it should be emphasized that there is no value in delaying the restoration. Finally, the parent is told that this operation is but a treatment phase. It is not an end in itself. If the operation is a success, and the apex has closed normally, it may still be necessary to remove the pulp for post

retention of an aesthetic crown at a later date. The parent is also warned to have the tooth radiographed at intervals, particularly if the child should transfer to the care of another dentist, because a certain percentage of teeth develop internal resorption following pulpotomy and if this ensues at some future date, the pulp should be removed at once.

CONDITIONS INVOLVING DELAYED TREATMENT

Coronal Fracture without Pulp Exposure.

—From accidents requiring immediate attention we pass to those which demand attention but where the lapse of a few hours does not make a tragic difference to the outcome. Teeth which show extensive dentine fracture, but which show no pulp exposure should be protected. If the dentist realizes that dentinal tubules are but extensions of the pulp itself, it stands to reason that those tubules present an open path for the invasion of the pulp by bacteria. The ingenuity of the dentist is often taxed to the limit in providing protection for such teeth. The use of cast gold crowns with acrylic labial facings, or of stainless steel crowns, usually supplies a stable protection. The celluloid crown form is of transient value and should only be used as a temporary measure if time does not permit the fashioning of a restoration which will withstand the stresses within the mouth. When planning such a restoration, one or two facts are worth considering. A pulp test is of little value in under eight weeks from the time of the accident. The pulp is in a state of shock, and too many pulps have been sacrificed because an inadequate response to a vitality test was obtained during this recovery period. Thus the pulp should be tested at intervals, and the results recorded. Such a test can only be made if the electrode can touch the tooth surface without interference from the protective restoration. The manner in which many dentists go about taking an electric pulp test makes one wonder if any credence can be placed in any such test for a child. When the child watches

*Metaphen, Abbott or Zephiran, Winthrop.

the dentist take a gadget out of the cabinet drawer, plug one end of the long, dangling wire into a light socket, and then sees him place the other end of the wire on his tooth, is it logical to expect him to give a reliable report of the initial irritation point, while he awaits the shock which he is sure will lift him right out of the chair? How much better it is first to place an ice cube, or a pledget of cotton chilled by ethyl chloride evaporation, on the arm of the child and ask him to note the cold sensation. We explain that we are going to do the same thing with his tooth and ask him to tell us the instant he feels the cold on his tooth. Now the electric pulp tester is removed from the cabinet and plugged into the outlet, while the explanation is made that this is an instrument which makes the tooth warm, and that he is to tell the very instant that he feels a tingle of warmth. The child will now have no fear and a true reading can be obtained. A second fact to bear in mind is that the crown should never be left for an extended time with a full coverage of acrylic or other materials which defy thermal change. A crown of this nature left on a tooth for ten years may protect the pulp, but it also denies that pulp the usual stimulation provided by thermal change. The result may be that when the final jacket crown is to be placed, there may be insufficient tooth structure for the shoulder, and the pulp may have to be sacrificed for post retention. Under no circumstances should a full gold crown be placed on any child's tooth. Children can be very cruel to each other, and the taunt of "goldtooth" may have a very serious impact on the child's personality.

Pulp Degeneration.—One of the tragic results of the lack of dental education among the general public is seen when a child, who has suffered a traumatic pulp exposure in an incompletely formed tooth, is not brought under the care of the dentist for several days following the accident. By this time the pulp has commenced to deteriorate and the time for a successful pulpotomy has passed. The

pulp must be removed and following treatment of the root canal, the canal must be obliterated if the tooth is to be preserved. The removal of such a pulp presents difficulties because of its mass. As there will be a considerable amount of instrumentation it is imperative that the child suffer no pain. A clear radiograph of the tooth is taken and, while the assistant is processing the film, we carefully anaesthetize the region, then place the rubber dam and sterilize the field as in the previously described pulpotomy operation. We open the pulp exposure and extend the opening well to the lingual. Using the radiograph as a guide, we place a square of rubber band on the root canal file to serve as a measuring device. We adjust this marker so that the distance from the point of the instrument to the marker is slightly shorter than the length of the tooth seen in the radiograph. Placing the instrument in the root canal, we allow the marker to rest at the incisal edge of the crown. Then we radiograph the tooth with the instrument in place and record the exact length of the tooth, as judged from this radiograph, on the patient's chart. We next place two, three or even four barbed broaches in a broach holder and using orthodontic pliers, we entwine them about each to fashion a "ganghook". A rubber marker is placed on the multiple broach and set at the working length. We insert the broach into the root canal and engage the pulp with a complete turn of the handle. A single large broach would tear through the mass of pulp tissue, but the multiple broach will grasp the tissue firmly, and allow a sharp cleavage of the pulp at the apex. Once the pulp has been removed in one piece, the dentist can speak with assurance when he tells his young patient that it will be unnecessary to anaesthetize the area when he comes for his next visit. The treatment of the root canal in such a tooth does not depart from routine procedure, but its obliteration is difficult. Unless the root canal can be obliterated there is nothing to prevent the development of a medium for the growth of bacteria within the

canal, and the child will have been subjected to an operation which can only end in failure. When the root canal is ready for obliteration, a large gutta-percha cone is rolled between two slightly warmed, sterile glass slabs until it assumes a cylindrical shape. This cone is then carried into the root canal to a depth corresponding to the working length established earlier. The tooth is again radiographed to re-check its exact length and, if correct, the master cone is cut flush with the incisal edge. In the young crown the pulp chamber is narrow in the labio-lingual aspect. Therefore it may be necessary to flatten the master cone slightly in order to allow it to pass into the wide root canal. We remove the master cone and cut about a dozen fine cones to the same length. A rubber marker is placed on a gutta-percha spreader to correspond to the exact length of the master cone. We dry the root canal and coat the master cone with a film of root canal sealer cement. The cone is carried into the root canal and used as a swab to coat the inner wall of the canal. We then slide the gutta-percha spreader along the side of the cone and press it to one side of the root. Removing the spreader, we slide a fine cone into the space which the spreader occupied. These supplementary cones cut to the exact length of the tooth must not be short of the incisal edge when in position. Otherwise if the coronal end of a cone is one millimetre short of the incisal edge, then it must penetrate a corresponding millimetre beyond the apex. We add gutta-percha cones until the spreader can no longer penetrate the mass, and, provided none of the cones has been allowed to go apically beyond the incisal edge, the completed root canal filling should display a dense mass, ending in a straight line at the apex. The excess gutta-percha is removed from the pulp chamber by using a warm instrument, the chamber is cleansed with xylol or chloroform, and the final restoration is placed.

Transverse Root Fracture.—The discovery of a transverse fracture through the root

of a tooth calls for cautious endodontic management. Necrosis of the pulp following excessive trauma is due in many instances to congestion within the root canal. However, when a root fractures there is no internal pressure as blood flows out through the break. In a very high percentage of cases the break is repaired by a callus formation and the pulp retains its vitality. The tooth should be kept under observation and a pulp test made at intervals. If the pulp becomes necrotic it may be removed, endodontic treatment carried out, and the fractured apex surgically removed. The exception to the rule is a fracture in the cervical third of the root. In this location it is neither possible to secure adequate stabilization nor to prevent bacterial invasion from the gingival crevice. If the crown is removed it is impossible to secure a sterile field in which to carry out endodontic treatment, so that removal of the tooth is usually necessary.

Putrescent Pulp.—No discussion of traumatic injuries involving the pulp would be complete without a word concerning one of the most painful results of destruction of the pulp. Some weeks or even months after the accident the child suddenly notices that the tooth is slightly tender to pressure. Within a matter of hours the pain becomes so excruciating that it is sometimes difficult to secure the permission of the child to allow the dentist to examine the tooth. The facts are that the pulp has become necrotic, but worse still, putrescence has developed with a rise of pressure within the pulp chamber. However, an acutely inflamed pulp with abscess formation within the pulp can give a similar clinical picture and this is one place where the electric pulp tester is of value. If it is a case of putrescence the tester should cause no reaction. It is often said that fluid within the pulp chamber gives a false recording but this condition is so rare that it can be disregarded. All that is necessary to give the child almost instant relief is to open

the pulp chamber. No anaesthetic is required for this operation. Before the advent of the high-speed air turbine this used to be an ordeal, but now the opening can be made with such a feather touch that there is no discomfort while penetrating the roof of the pulp chamber. It is important that the opening be made in a location which will not interfere with the placement of the rubber dam at a later date. The pulp chamber is left open. Placement of a pledget of cotton in the opening, with the thought of preventing food from entering the orifice, courts a return of pain, as the cotton can become the matrix for a mucilaginous plug with a rapid return of pressure and pain.

The traumatically injured pulp may become necrotic without any clinical evidence other than a change of colour in the crown. The first indication that the patient has anything wrong is when the tooth suddenly becomes tender, and the face commences to swell. The acute alveolar abscess is a cause of concern to the patient, and all too often suggests to the dentist that early removal of the tooth is the only solution for the problem. Before embarking on such a radical course the dentist should consider two facts. The first is that removal of a tooth does not solve a youngster's problem; it only creates a more serious problem. The second is that it is not the tooth that causes the abscess, but the presence of the necrotic material within the root canal of the tooth. In other words, if the root canal can be rendered sterile, and then obliterated, the periapical tissues will return to normal. Thus it is that treatment of the acute alveolar abscess should follow the same course as would be the case if the acute abscess were found on the wrist. We secure drainage, either through the root canal or by incision of the mucosa, prescribe antibiotic therapy if deemed advisable, increase fluid intake, give an intestinal laxative and prescribe a sedative for the reduction of pain. When the inflammation subsides the dentist can very quietly and without pressure decide

whether the tooth can be preserved or whether it must be sacrificed.

In this age of speed and highly competitive sports, accidents involving the teeth of children are an everyday occurrence. Every dentist should be prepared to give the help that the child so sorely needs. When a child enters the office with a traumatically injured tooth the dentist should remember that he must not let himself become overly disturbed at the emergency, that he must assess the damage quietly with preservation of the tooth his primary consideration, and that he should resolutely leave the forceps in the cabinet. He will be amazed at how seldom he ever has to resort to them.

RÉSUMÉ

L'auteur recommande une procédure pour traiter les urgences aiguës amenées par des traumatismes sur les dents des enfants; il décrit en détail des techniques pour traiter une extraction complète, une sub-luxation ou une fracture coronaire exposant la pulpe. Il mentionne les cas où l'accident est survenu depuis un certain temps; il expose des façons de traiter les dents fracturées où la pulpe n'est pas exposée, les dégénération pulpaires, les fractures transversales des racines et les gangrènes de la pulpe.

Il décrit une technique pour la pulpotomie, l'obturation du canal à l'aide de pointes d'argent, la réimplantation et l'ancrage des dents antérieures sorties de leur alvéole; il suggère de régler immédiatement le problème des dents partiellement sorties de leur alvéole en les stabilisant pour traiter leur luxation. La pulpotomie est le traitement de choix pour les fractures coronaires comprenant la pulpe.

Il faut faire une pulpectomie quand le patient a été conduit trop tard chez le dentiste et quand la pulpe est dégénérée; l'auteur expose longuement cette technique et celle de l'obturation du canal.

Il conseille un traitement conservateur pour les fractures transversales de la racine.

Il faut, pour les cas de gangrène pul-

paire, faire immédiatement un drainage pour décongester la chambre pulpaire.

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Medication for Children

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It is true in dentistry as it is in medicine that successful practice is both an art and a science. Much can be learned of the art of practice if one heeds the old admonition to medical students "primum non nocere" i.e. first, do no harm. Medication is an essential adjunct in the dental treatment of the child as well as the adult. Since all medication potentially alters the physiological processes of an individual, it deserves close and thoughtful study. In the care of the child a most important use for drugs is in premedication to facilitate routine dental care.

A child is normally apprehensive in new situations. This is especially true of the preschool child as he approaches a dental appointment. Many environmental conditions beyond the dentist's control tend to produce a child who is fearful of the dental situation. This fear is a normal protective mechanism and must be recognized as a primitive and emotional response. While apprehension and its manifestations arise in the cerebral cortex, this condition is subject to several methods of control by the dentist.

Treatment to be most effective should be directed, when possible, at the cause and not the symptom. The treatment of the cause of a problem with drugs requires an understanding of what they can and cannot do. Drugs can only stimulate

or depress a normal physiological activity or a pathological process.¹

In the treatment of apprehension as manifested in the child, the dentist should first study his approach to the problem. Since children are very sensitive to the moods of adults and to their environment, it is of great importance that the dentist exhibit a kind, interested and confident attitude. Any display of undue haste, irritation or indecision will quickly disturb an apprehensive child. On the other hand a confident, kind and direct approach to the child tends to calm his fears quickly and make him receptive to the discipline that dental procedures require. If the dentist can control himself when confronted with a fearful child, he has made very significant progress in controlling the child patient.

In addition, the dentist must give the patient reason for confidence. If he promises that an operation will be comfortable he must ensure that it is. As each new procedure is introduced it should be described briefly in understandable terms. The "tell-show-do" philosophy quickly builds trust and co-operation. The dentist should also take steps to reduce the fear producing stimuli in his environment to a minimum. Loud noises and a display of fearsome instruments are to be avoided. Appointments should not be excessively long and tolerance should be displayed for the child's normal restless activity.

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By these means a fearful child is re-conditioned and becomes a good patient who can accept dental treatment gracefully. In this relationship where good rapport is developed, the cause of the apprehension has been reduced very greatly. The dentist should look upon each appointment with a child as a teaching opportunity. Dentistry is both an educational and a health service. To ignore the educational portion of the responsibility is to deny the classical interpretation of the title "Doctor" which implies a teacher.

While re-conditioning and teaching are the ideal means of treating apprehension in children, it is not always possible to succeed in the dental situation. In an office where the dentist and his staff are genuinely interested in their welfare, failure to achieve satisfactory rapport with normal children is infrequent. However, one must admit that occasionally a child is so apprehensive or emotionally disturbed that medication is necessary. This should be given in carefully selected cases, so that the child may receive urgent dental care. While this type of patient is the exception, his problem deserves further attention here. In the disturbed child drug therapy is directed at suppressing the activity of the cerebral cortex and controlling the manifestations of apprehension.

DOSAGE

When drug administration is contemplated for children, dosage is of critical importance. Rules for drug dosage utilizing formulae based on age or weight alone are not reliable for children in the dental situation.^{2,3} Determination of dosage should take into account several factors:

1. Age—While age is an important factor in determining dosage, children generally require relatively larger dosages of sedatives.⁴ This has been related to the child's proportionately larger surface area, basic metabolic rate, and urinary volume.⁵

2. Weight—While weight alone is not a reliable guide to dosage, a heavier child could be expected to require larger dosages.

3. Mental Attitude—A dose for a disturbed dental patient is not always the same as the dose which is found adequate in the home or a physician's office. The degree of apprehension exhibited, therefore, influences dosage.²

4. Physical Activity—When fear evokes a physically violent reaction in a child he will require a larger dose than a less active child.

5. Stomach Contents—Drugs administered orally, usually the method of choice, on a full stomach are likely to give less prompt and efficient response.

6. Time—Children are more alert at certain times of the day than others. Less sedation is required at a normal nap time than just after arising.³ Album⁶ points out that dentists have frequently been excessively cautious in the use of sedation and have had unsatisfactory results because of insufficient dosage. He also states that children may even become highly excited following an insufficient dose of a sedative drug.

DRUG CHOICE

Barbiturates.—Hypnotic drugs administered in less than hypnotic doses are sedative in action. The drugs of choice are sodium pentobarbital (*Nembutal*) and sodium secobarbital (*Seconal*). These are short acting barbiturates that have enjoyed wide use in dentistry. Their dosage and action are similar. Album⁷ has found sodium secobarbital preferable to sodium pentobarbital because the former is dissipated more quickly. These drugs are not analgesic in action and do not make it possible to avoid the use of local anaesthesia. They do, however, act with positive synergism when used in conjunction with local anaesthesia. The drug compounded in the elixir form is not suitable since an excessive amount of this preparation is required in order to obtain the minimum dose for sedation.⁷

There is in reality a wide safety margin in the administration of barbiturates. Album⁶ recommends initial doses as large as 2½ to 3 grains. Maximum effect is ob-

tained in 45 to 60 minutes. If satisfactory sedation is not obtained within that period of time, an additional $\frac{3}{4}$ grains should be administered. The total dosage should not exceed 4 grains (250 mgm.).³ It is preferable that drugs be given in the office under the supervision of qualified office personnel. A quiet environment enhances the success of the medication.

Drugs should not be given to children suffering from upper respiratory infections. The parents should accompany the child and should be advised that the patient will sleep for several hours following the appointment and awaken thirsty.

Ataraxics.—The so-called tranquilizers are popular for treating mental problems. Most compounds have been found effective in chronic institutionalized and other frankly psychiatric patients. There is a lack of objective studies on the application of these drugs to dental situations. Part of the confusion over the use of ataraxics is due to the use of the term "anxiety". To the laity "anxiety" is equated with apprehension while the medical interpretation refers to a psychoneurosis characterized by a morbid fear and dread.⁵ Hydroxyzine dihydrochloride (*Atarax*) is the most popular drug of this group for use in paediatric and dental practice. Kopel⁸ reports that hydroxyzine will produce a calming effect for from one to two hours. He suggests a dose of 25 to 50 mgm., 45 to 60 minutes before each appointment. He has reported satisfactory results with the very apprehensive and emotionally disturbed child.

The use of these drugs is to assist the patient adjust to the dental situation. If they are used as a crutch for the dentist then their use is to be condemned. Ideally, the use of a sedative drug is for a few early appointments only, and they are withdrawn as the patient adjusts to the dental environment. One cannot expect the child to learn while he is sedated or under a general anaesthesia.

SUMMARY

Apprehension of dental treatment in normal children is best treated by directing attention to the causes rather than the symptoms. Confident, kind management of the child in a pleasant dental environment and self-control by the dentist when confronted by a fearful child will usually remove apprehension. The dentist should regard each appointment as a teaching opportunity.

In those few carefully selected normal patients who require sedation, attention is focused on adequate dosage which is frequently proportionately higher than that recommended for adults. Sodium secobarbital is the drug of choice for sedating children. An ataraxic drug that may prove to be useful is also discussed.

RÉSUMÉ

On contrôle mieux la crainte qu'éprouvent les enfants normaux chez le dentiste en s'occupant des causes plutôt que des symptômes. Un dentiste réussit généralement à atténuer cette crainte en contrôlant sa propre nervosité et en faisant preuve de confiance et de bonté dans un climat accueillant. Le dentiste doit profiter de chacun des rendez-vous pour faire l'éducation de l'enfant.

L'auteur touche à la question des enfants normaux qui ont besoin de sédation; il attire l'attention du lecteur sur la posologie qui est souvent proportionnellement plus considérable que celle recommandée aux adultes. Le sécobarbitol de sodium est le médicament de choix pour calmer les enfants. L'auteur parle aussi d'un sédatif ataraxique, le déhychlorure d'hydroxydine, qui pourrait être utile dans ces cas.

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RESEARCH ANNOTATIONS

DENTAL RESEARCH IN THE ROYAL CANADIAN DENTAL CORPS

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The Royal Canadian Dental Corps is in an excellent position to conduct certain types of dental research by virtue of having a captive population of servicemen available for study; excellent clinical, teaching and administrative facilities; and a sizeable group of well-trained professional and auxiliary personnel. An overall dental research program has been developed for the Corps with activities limited to the following areas of investigation: (a) dental officer productivity; (b) clinical investigation of preventive agents in adults; (c) employment of auxiliary dental personnel; (d) epidemiological studies of dental disease in servicemen; (e) treatment program planning in R.C.D.C. clinics; and (f) dental equipment and supplies. Studies have been undertaken or plans drawn up for investigation in each of the above categories:

Dental Officer Productivity.—This is a most important subject for the Corps with its present acute shortage of dental officers. A study has been completed on the effect of the air turbine on volume of dental care performed. Investigation is in progress on rating dental officer productivity and future plans include work measurement, motion studies and the effect of clinic accommodation on productivity.

Clinical Investigation of Preventive Agents in Adults.—A study to determine the effect of topical application of a 10 per cent solution of stannous fluoride on caries incidence in young adult males is nearly completed at the Royal Military College, Kingston, Ontario. It is hoped to follow this study with a larger one using the same agent and also a study on stannous fluoride prophylaxis paste.

Employment of Auxiliary Dental Personnel.—A pilot study is underway at the R.C.D.C. School, Camp Borden, Ontario, to determine the training required for expanding the services rendered by dental auxiliaries in the Corps and the problems involved in integrating such personnel into military dental practice.

Epidemiological Studies of Dental Disease in Canadian Servicemen.—In the field of epidemiology, the Corps has completed a limited prevalence study, the purpose of which was to give an estimate of the dental treatment requirements of Canadian servicemen and to serve as a pilot project for developing a more detailed and scientifically accurate study to be performed at an early date.

Treatment Program Planning in R.C.D.C. Clinics.—In order to provide a more efficient dental service at R.C.D.C. clinics treatment program planning is being emphasized. In this regard, a study will be commenced shortly to evaluate the present system of treatment priorities; to determine the time required to complete various treatment and laboratory procedures; to determine optimum and minimum dental officer-patient and dental officer-auxiliary ratios; and to study dental survey methods.

Dental Equipment and Supplies.—Before an item of dental equipment or supplies is added to the R.C.D.C. stores list it is tested clinically at the R.C.D.C. School and selected clinics.

SOME POTENTIALS OF STATISTICAL RESEARCH IN DENTISTRY

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With equal reference to dental caries, periodontal disease, malocclusion, and in a special sense in dental educational research, promise for advancement lies in the careful weighing and grouping of the numerous associated factors or symptoms pertaining to each topic.

In orthodontic research for example the pressing need seems to be the isolation of

groups of symptoms which represent clinically recognizable syndromes. Present recognition of these syndromes (i.e. the diagnosis of patients) is encumbered by the superimposition of a haphazard distribution of unrelated anomalies which may or may not influence the prognosis of the case. Once specific syndromes have been clearly defined future diagnosis of orthodontic cases might be facilitated by diagnostic models similar to those being tested with electronic computers in the medical field. By these means, given a group of symptoms, the most probable syndrome or syndromes could be quickly isolated.

In dental caries and periodontal research, indices of the extent of the disease are available in terms of DMF counts or the various periodontal indices. For these diseases the pressing thing is the proper weighing or evaluation of factors known to be related to the intensity of the disease. Many of the factors are so correlated that to a considerable extent they are reflections of the same underlying mechanism—for example in dental caries the previous total caries, lactobacillus count, current number of open lesions, and oral hygiene etc. are not completely independent but all have some undefined bearing on the susceptibility of the patient. It is suggested that the methods of factor analysis developed in the psychological field may provide a means of selecting the most important factors or groups of factors for use in regression equations to predict the future caries increment of a patient.

By this means the current liability toward new lesions or progression of lesions may be established and this in the real sense constitutes diagnosis for the caries and periodontal fields.

Lastly in the dental educational field factor analysis is likely to be useful in the development of aptitude tests and in the evaluation of course content using the student's achievement as criteria.

EDITORIALS

The Development of Paedodontic Practice in Canada

Dean Inge once said: "There is no greater disloyalty to the great pioneers of human progress than to refuse to budge from where they stood." In order to ascertain how loyal we have been to the pioneers in the field of preventive dentistry, let us review how far we have travelled in the last thirty years.

Preventive medicine, generally, for a long time progressed slowly, simply because it was considered less urgent than curative medicine. Then, too, curative medicine held the limelight because of its dramatic appeal to the public and physician alike. However, in spite of this, preventive medicine has made tremendous strides. Probably the results attained in the control of communicable diseases by preventive measures has been the greatest factor in convincing the public of the value of preventive medicine in the maintenance of the health of the nation. The spectacular results in Ontario of the decline in diphtheria mortality from 39.9 cases per 100,000 in 1900 to 0.4 in 1942 is so dramatic that the public cannot help but be aroused. When dentistry, through the use of fluorides in communal water, or some other means, can produce similar dramatic results, the public generally will become aware of the value of good dental health among our children.

In 1931, there were only seven or eight paediatricians in the city of Toronto attempting, against great odds, to lay a sound foundation upon which to build a

program of preventive medicine. Today, there are some eighty-four paediatricians in Toronto, working hard at the task of keeping well babies well.

Dentists too, like the physicians of the past, were attracted to the curative phase of practice simply because they were able to perform feats of mechanical achievement and thus dramatically bring about a transformation greatly appreciated by the patient. There is no doubt that in the not too distant past, the appreciation of the parent for the dentist's skill in the construction of an artificial appliance for his own mouth, greatly outweighed the appreciation he had for his skill in saving his child's deciduous tooth or, indeed, his efforts in trying to educate him in the prevention of dental disease in the mouth of his child.

In 1931 there was little or no training in dentistry for children in any of the dental schools in Canada. In fact the average distribution of subjects in the dental curriculum, as shown in the 1934 curriculum survey of American and Canadian dental schools, indicated dentistry for children as occupying 0.00 percent of the total curriculum. By 1942 it had increased to 2.33 percent.

Shortly after commencing practice, this writer came in contact with the patients of the then-practising paediatricians, and as a result, became aware of the similar challenge that confronted practising dentists in the field of prevention. The stimu-

lus which he received as an undergraduate from Dr. M. A. Cox, professor of Preventive Dentistry at the Faculty of Dentistry, University of Toronto, and from a lecture which he heard after graduation, given by Dr. Harry S. Thomson, a most stimulating speaker, influenced him to devote the rest of his professional career to dentistry for children.

While he has often been referred to as a pioneer in Canada in this field, he would rather think of himself as one who accepted a challenge to build on the foundation laid by others who previously worked hard and diligently under great difficulties. We have only to follow the career of Dr. Thomson, then a voice in the wilderness, as he crossed Canada, attempting to arouse governments, universities and the public alike to the value of preventive dentistry, to appreciate the task that had been undertaken by the Canadian Dental Hygiene Council which he served. During his term of office, for many years only one province had a dental director in the provincial department of health, and few municipalities, outside of the larger cities, interested themselves in the dental health of the children. None of the dental schools in Canada, at that time, had a paedodontic department, and yet practising dentists were being challenged to do work for which the universities had neglected to train them. In fact, it was not until the late forties that the dental schools became interested in teaching dentistry for children and the following schools established departments or courses in the field: Université de Montréal, 1944; University of Toronto, 1946; McGill University 1947; Dalhousie University, 1951; University of Alberta, 1956 and the University of Manitoba, 1961.

Dr. Thomson deserves great credit, for it was because of his boundless enthusiasm that governments, universities, the dental and medical professions and the public became aware of the importance of dental health of the child. Today, because of the tireless efforts of the early pioneers we have a dental director at the federal level, and also at the provincial

level in all ten provinces; and at least two of the universities have a graduate course leading to a diploma in Dental Public Health. Many municipalities now employ a qualified dental public health officer.

By the time a student graduates from the Faculty of Dentistry, University of Toronto, he has received paedodontic training consisting of 24 hours of lectures, 28 hours of laboratory and seminar instruction, 105 hours of clinical practice and two hours' ward rounds in a children's hospital. Most of the dental schools across Canada are carrying out a similar program.

The Canadian Dental Association, under the able leadership of Dr. D. W. Gullett, has done much to prepare the way for a health insurance plan that would be focused on the health of the child. Another progressive step was taken some ten years ago by the profession with the formation of the Canadian Society of Dentistry for Children. Today the Ontario Chapter has some 300 members, and while a small number of the members devote their time entirely to children, the bulk of the membership is made up of general practitioners interested in gaining more knowledge to better fit themselves to take care of the child patient.

Another highlight of the progress in this field was the establishment of a number of departments in hospitals across Canada to care for sick and handicapped children. Government and private insurance plans, too, are beginning to recognize that the teeth are part of the human anatomy, and if hospitalization is necessary, are willing to underwrite the cost on a par with any other service.

In reviewing the above events, it can be said that while our advances in the field of prevention are not as spectacular as those of medicine, nevertheless, with the increased interest at all levels, and the research being carried out on fluorides as a method of control of one dental disease, it is evident that the future looks bright.

When invited to participate in this special issue on dentistry for children, it was

this writer's first thought that his contribution should take the form of a challenge to dentists to render more and better dental care for children. The more he thought about it, however, the more he realized that he, for one, had been challenging the profession for years to do something for which they had received little training. The dentists of Canada, in spite of their handicap, have accepted the challenge well and should be complimented for it.

Looking back over the past thirty years, those who pioneered in this field were no

doubt at times frustrated with the pace of change; but they could have taken a lesson from the thought so well expressed by Bernard Baruch in *My Own Story*:

"To serve as an effective example — and this applies to all human affairs — one cannot be too far ahead of the people one wants to influence. . . . This view may not satisfy those who would remake the world overnight. It may not satisfy those who want things kept as they are. I believe that change is part of living. But I like a pace of change that does not create more trouble than good."

S. A. MacG.

Paediatrics and Paedodontics March Together

"The care of children and herewith of the sick child must have formed part of the interests of man from time immemorial; natural affection alone must have ensured this as it does indeed for offspring of the brute creation." These are the words of G. F. Still, written in 1931, and recorded in his text *The History of Pediatrics*.

Now, in 1961, we have, for the first time, an issue of the *Journal of the Canadian Dental Association* devoted entirely to dentistry for children, and the dental profession as a whole has reached a new plateau in the progress of dental education and dental practice.

This writer is proud to have as friends the few stalwart adventurers in dentistry, such as Dr. R. G. Ellis, Dr. S. A. MacGregor and others who, overcoming many difficulties, reached this plateau some years ago, and so made a place for the profession to follow.

We know from written records passed on to us from the time of Hippocrates that children have been receiving special medical care since early times. One of the first of the articles attributed to Hippo-

crates dealt with dentition—not the teeth themselves, but the illnesses that frequently accompanied the eruption of the deciduous dentition. We also know that hospitals devoted solely to the care of sick children have been in existence for more than a hundred years. One wonders, then, why we tend to date the beginning of paediatrics as a specialty, as some time during the first quarter of the twentieth century. Actually, our kind of paediatrics must have started with Edward Jenner and his smallpox vaccine introduced in 1796, and with those physicians who started isolating infectious disease many years ago.

Perhaps, in this century, many physicians and dentists realized for the first time that the treatment and care of established illness, while necessary and good, did little or nothing to prevent the recurring cycles of disease, and very little for that large portion of humanity whose inadequate diets and poor nutrition made them more susceptible to all the ills of mankind, from dental caries to death-dealing pneumonias. Not until then did the words, preventive department, begin

to appear on the doors of offices in both dental and medical faculties throughout the world. One of the first of these, if not the first, appeared in the dental school in Toronto, the course of instruction being conducted by the dean of the dental faculty, Dr. Wallace Seccombe.

Dentists, of course, have had young children as patients for more years than this writer can remember. Children's hospitals have had dental departments, but these departments, if functioning at all, were so swamped with patients that only the most acute cases could be treated. For the most part, symptoms, not the disease, were being treated but not prevented. Having played a minor role during the past thirty-eight years in the education and training that has led to the present-day achievement, this observer will briefly review some of the events that have occurred.

The first association with the School of Dentistry of the Royal College of Dental Surgeons of Ontario, now the Faculty of Dentistry of the University of Toronto, began in 1923 when this writer was invited by Dr. Wallace Seccombe, then dean of the dental school, through Professor Andrew Hunter with whom he had a fellowship in biochemistry, to teach biochemistry to the third-year dental students, on the fourth floor of the old building at 230 College Street in Toronto. It was a tough assignment for several reasons; firstly because neither dental nor medical students had as yet, if indeed they do today, realized the importance of the basic sciences and their application to the more practical phases of their clinical work; and secondly, because the teacher was ill fitted for such a responsible assignment. A large portion of the students, being veterans of the first world war, were older than the average student of today, and, shall we say, more set in their ways. They were exceedingly anxious to be about the business of making a living in the practice of dentistry. They did not take kindly to pouring liquids into thin glass tubes, watching them turn various colours, and then writing a description of the whole

uninteresting and mysterious business into notebooks which we required them to purchase for this purpose. To the teacher it was a depressing assignment and had it not been for the tremendous foresight and enthusiasm of Dr. Seccombe, and his vision of the part dentistry was to play in any general health program through the teaching of preventive dentistry, he would surely have taken his few talents elsewhere.

Shortly thereafter, with an appointment to the Department of Preventive Dentistry, he began to see what few others saw in those days, how frequently the conditions in the mouth and teeth reflected not only the social and economic status of the individual, but also his general well-being and future health. Although the writer was a practising paediatrician, we were not then particularly interested in the children, but the teaching of various theories of the causes of dental caries, of necessity brought ever more children to the preventive department.

The 1920's were still the days of rickets and scurvy, and the times might well be called the vitamin era. The Faculty of Medicine was teaching what was best to feed sick people, but little attention was paid to normal nutrition in well people. As our knowledge of the vitamins widened, other facets of nutrition became important. The study of rickets brought to light the necessity for a normal blood calcium and a properly related phosphorous level. Canadian dentists should be proud of the fact that in the 1920's, Dr. Seccombe had tables of food values for constructing normal diets, at a time when few professional men knew, on a scientific basis, what a normal diet should consist of. It must also be noted that there were many more phases of nutrition then, than there are today, still uninvestigated. Our knowledge then was slim, but it was sufficient for us to realize that what was good for the teeth was good for the whole body.

In due course experience as a member of the staff at the Toronto Hospital for Sick Children taught the writer much

about feeding little babies, but the hospital nutritional laboratory, which was to become so important in the years ahead, was just beginning to function. The relation of specific organisms to various diseases began to be correlated by well manned pathological and bacteriological laboratories all over this continent. The two professions of medicine and dentistry embarked on a new way of life. Progress at times has been slow but it has never halted.

If one wonders why a paedodontic department was not established in Toronto's

dental school until 1946, one must remember that a separate department of paediatrics in the medical school of that university was not established until 1935.

Perhaps we may conclude with the words of the song from *The King and I*: "It is a true and honest thought, if a teacher you become, by your pupils you will be taught." It is true, by our pupils we have been taught, and perhaps never so well as by the articles in this issue of the Journal.

M.A.C.

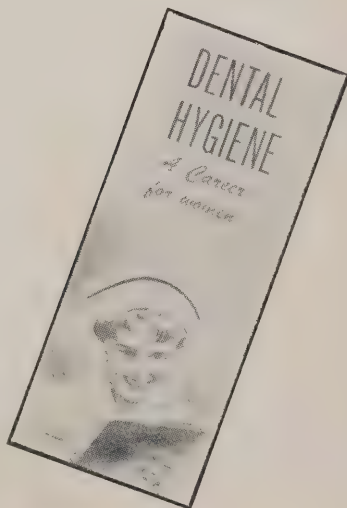
DENTISTRY IN THE NEWS

The Association

NEW PAMPHLET ON DENTAL HYGIENE CAREERS

An attractive new pamphlet, *Dental Hygiene — A Career for Women* is now available to dentists, dental hygienists and others concerned with offering advice and guidance on suitable careers to female high school students. The pamphlet provides information regarding the work, the qualifications and the education of a dental hygienist. Prepared by the director of the school of dental hygiene of a leading Canadian university, the pamphlet is published under the auspices of the National Recruitment Committee (Council on Education) of the Canadian Dental Association.

Copies of the pamphlet may be secured from the Canadian Dental Association as follows: single copies free of charge; \$1.65 per hundred copies.



COMMITTEE APPOINTMENTS ANNOUNCED

CDA president William Miller has announced personnel changes on two councils and committees.

R. L. Twible of Toronto has been appointed to the Auxiliary Services Committee. Following the death of R. A. Rooney, H. R. MacLean became chairman. Dr. Twible's appointment brings the Committee to full strength again. Other members are R. M. Le Blanc and D. B. Ward of Montreal, and G. C. Swann of Calgary.

With the resignation of R. D. Slater who is moving to Vermont as dean of the medical school, W. R. Bruce has been appointed to the Council on Research. Dr. Bruce is on the research staff of the Department of Medical Biophysics at the Princess Margaret Hospital in Toronto.

Canada and the Provinces

ROYAL COMMISSION ON HEALTH SERVICES SCHEDULES FURTHER HEARINGS

Following a series of hearings in eastern Canada towards the end of last year, the Royal Commission on Health Services re-

convened in Winnipeg on January 15. Further hearings were held in Regina, Edmonton, Victoria and Vancouver. The Commission returned to Ottawa on March 19. In April it will be in Quebec City and Montreal, moving to Toronto on May 7. Final arguments in verbal or written form may be received later in Ottawa.

The deadline for research projects initiated by the Commission is December 1962. Allowing another six or eight months for evaluation of briefs and research reports, this would suggest that the Commission's report may be forthcoming during the fall or winter of 1963.

QUEBEC

College of Dental Surgeons of the Province of Quebec.—H. T. Oliver of Montreal was the official representative of the Canadian Dental Association and College of Dental Surgeons of the Province of Quebec to the 3rd Asian Pacific Dental Congress held in Tokyo, December 17-22, 1961.

At a combined meeting of the Montreal Dental Club, Mount Royal Dental Society and the Société Dentaire de Montréal held on November 27 in Montreal, Dr. Oliver presented a framed certificate marking the Tokyo Congress to William Miller, president of the Canadian Dental Association. The certificate now hangs at C.D.A. headquarters.

B. & I. Photography



At a recent meeting of the combined dental societies of Montreal, H. T. Oliver, left, presented a certificate from the 3rd Asian Pacific Dental Congress to William Miller, Canadian Dental Association president. Don W. Gullett, Association secretary, is at the right.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2

1967 Toronto, Ontario
(Centennial Celebration
of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
March 15-18, 1962	Intl. Association for Dental Research	Sheraton Jefferson Hotel, St. Louis, Missouri	Dr. J. C. Muhler	Indiana University Medical Centre, 1100 W. Michigan Street, Indianapolis, Ind.
March 22, 1962	Academy of Dentistry, Toronto, 3rd Stated Meeting	Faculty of Dentistry, University of Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ont.
May 13-16, 1962	Ontario Dental Association Convention	Royal York Hotel, Toronto	Mrs. W. C. Durham	230 St. George Street, Toronto 5, Ont.
24-26 mai, 1962	Congrès de l'Association dentaire de la province de Québec	Hôtel Chicoutimi, Chicoutimi	Dr. J. C. Simard	397 Racine Est, Chicoutimi, P. Qué.
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eatc	Farquhar Bldg., Halifax, N.S.
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20, 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.1, England
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Building, Prince Albert, Sask.
Oct. 29-Nov 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior Street, Chicago, Illinois

POSTGRADUATE AND REFRESHER COURSES (U.S.)

ALABAMA—April 7-9, 1962—Malocclusion, Its Detection, Moderation and Interception
 ALABAMA—April 14-15, 1962—Advanced Periodontic Procedures
 ALABAMA—April 25-27, 1962—Immediate Endodontic Therapy followed by Periapical Surgery
 NORTHWESTERN—April 9-10, 1962—Use of Gold Foil
 NORTHWESTERN—April 9-13, 1962—Oral Surgery in General Practice
 NORTHWESTERN—April 25-27, 1962—Orientation for Hospital Dental Service
 OHIO STATE—April 9-13, 1962—Endodontics
 OHIO STATE—April 27-28, 1962—Dental Drugs in Action
 TEMPLE—April 9-13, 1962—Advanced Surgical Techniques in Periodontal Therapy
 TUFTS—April 5-7, 1962—Prosthetic Procedures for the Periodontal Problem
 TUFTS—April 9-13, 1962—Special Participation Course in Periodontology
 YESHIVA—April 12-13, 1962—Anaesthesiology

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters upon request. Information concerning postgraduate and refresher courses should be sought from the sponsoring institution.

L'Association Dentaire Canadienne.

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JOURNAL

Les réactions inflammatoires et les maladies périodentaires

par BERTRAND LEMIEUX, B.A., D.D.S., Ste-Foye, P. Qué.

L'inflammation est l'ensemble des réactions opposées par l'organisme, et surtout par les éléments du tissu mésenchymateux, aux corps incompatibles et nuisibles à l'organisme et qui peuvent se trouver en présence du tissu conjonctif.¹ D'un autre côté, les maladies périodentaires sont le résultat d'un état pathologique dans les tissus de support des dents, dont l'étiologie est complexe, non spécifique et progressive.²

L'inflammation semble avoir deux phases. La première est une réaction de défense de l'organisme, en vue de détruire l'irritant par les globules blancs qui l'isolent. L'irritation peut provenir des bactéries, corps étranger, etc. Si les

leucocytes ne réussissent pas à éliminer l'irritant, ils vont continuer leur lutte chroniquement. La deuxième phase se produit si l'irritant est rejeté: les cellules présentes (fibroblastes) élaborent du tissu cicatriciel à partir du tissu conjonctif environnant: ce tissu se différencie par la suite. Ceci est une explication classique, mais il a été constaté que le mécanisme de l'inflammation avait trois phases: une dégénérescence, une exsudation et une réparation. Au point de vue clinique, l'organisme aurait deux moyens de combattre l'irritant: le premier serait une prolifération gingivale (elle est la plus fréquente): l'autre serait l'exsudation. Tout dépend de la disposition du patient pour le moyen à

prendre pour combattre l'irritant. L'inflammation a pour but d'amener la guérison.³

Les premiers phénomènes réactionnés de l'inflammation sont:

1. Une coloration rouge des tissus autour de la zone ecchymotique, due à la distension des vaisseaux de la région qui entoure la zone d'attrition. Ces vaisseaux contiennent plus de sang qu'à l'état normal: hyperémie ou congestion (artérielle, veineuse ou capillaire).¹

2. L'élévation thermique locale et durable, surtout du foyer d'attrition, due à l'augmentation des combustions tissulaires locales en rapport avec l'hyperémie inflammatoire. La combustion favorise un apport considérable de sang oxygéné qui augmente le métabolisme local et donne ainsi plus de chaleur.¹

3. Il y a une tuméfaction locale autour du foyer d'attrition dans la zone d'hyperémie due à l'accumulation en quantité anormale dans les interstices tissulaires de liquide et de cellules issues des vaisseaux congestionnés: c'est l'exsudat.¹

4. La douleur est un symptôme de la compression des nerfs sensitifs par l'œdème et la congestion.

On constate que c'est l'hyperémie qui est à la base de tous les signes cardinaux de l'inflammation.¹

Il arrive que d'autres phénomènes vont se surajouter dans la suite: phénomènes de prolifération cellulaire qui caractérise la seconde partie de la phase réactionnelle: c'est la phase proliférative, qui est un processus d'un tissu provisoire, dit tissu de granulation.¹

Ce tissu de granulation a des constituants apportés par le sang: polynucléaires neutrophiles, lymphocytes sanguins, plasmocytes; il y a aussi des constituants naissants sur place, dits autochtones: histiocytes, macrophages, cellules géantes, fibrocytes, néocapillaires.¹

L'histogénèse du tissu de granulation nous amène à une évolution du bourgeon charnu jusqu'à l'épidermisation.¹

Les grandes formes de l'inflammation déterminent les agents étiologiques: les

agents infectieux, telles les bactéries, les endo-toxines et les toxines; les agents toxi-infectieux, telles les exo-toxines; les agents toxiques, physiques ou chimiques et les agents inertes, tels les corps étrangers.

Les lésions inflammatoires varient avec la durée d'action du microorganisme; elles peuvent être: aiguës, processus très rapide; sub-aiguës, fistule; ou chroniques.

Elles varient aussi avec le nombre de bactéries. A dose forte, nous pouvons avoir une réaction aiguë; à dose moyenne, une réaction sub-aiguë et à dose faible, une réaction chronique.¹

Elles varient encore avec leurs propriétés. Une bactérie toxigène peut amener une réaction inflammatoire œdémateuse, fibrineuse, purulente ou hémorragique. Un microbe peu toxique peut donner une réaction sub-aiguë ou chronique.¹

LES MALADIES PÉRIDENTAIRES

Les maladies péri-dentaires peuvent être divisées en deux groupes: maladies de la gencive proprement dite et maladies du périodonte.

Maladies de la gencive

On trouve dans les maladies de la gencive, les gingivites, les hypertrophies et les atrophies.⁴

Toutes les gingivites déterminent une inflammation. Voyons d'abord les gingivites aiguës (Figure 1).

Gingivite nécrotique aiguë. — Elle manifeste une inflammation nécosante aiguë et la formation d'une pseudo-membrane: il se produit une hyperhémie marquée avec engorgement des capillaires et infiltration de leucocytes polymorphonucléaires. Cette hyperhémie inflammatoire aiguë apparaît cliniquement comme un érythème sous la surface pseudo-membraneuse.⁴ L'exsudat à la surface des lésions nécrotiques contiendrait des cocci, des bacilles fusiformes et des spirochètes.⁵ Certains disent que des fuso-spirochètes pénètrent dans les

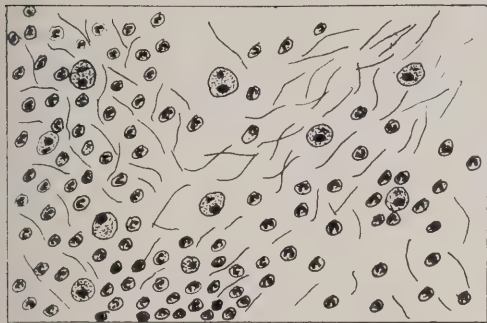


FIGURE 1 Inflammation aiguë: elle contient surtout des leucocytes polymorphonucléaires. On y voit des cellules phagocytes mononucléaires et quelques lymphocytes. X 500.

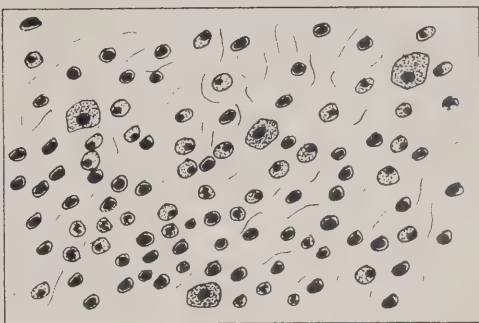


FIGURE 2 Inflammation chronique: elle contient surtout des lymphocytes. On y voit aussi beaucoup de plasmocytes et quelques leucocytes polymorphonucléaires. X 500.

tissus vivants.⁶ D'autres prétendent que des bacilles fusiformes sont poussés dans les espaces tissulaires par un traumatisme. Ces micro-organismes pénètrent dans l'épithélium de la gingivite nécrotique aiguë, mais non dans les tissus vivants sous-jacents.

Gingivo-stomatite herpétique aiguë. — L'agent causal est le virus d'herpès.⁷ Les ulcérations de la gingivo-stomatite herpétique présentent une partie centrale d'inflammation aiguë et un degré varié d'exsudat purulent. La vésicule complètement développée est une cavité dans les cellules épithéliales, ayant occasionnellement des leucocytes polymorphonucléaires.⁸ Autour de la vésicule et dans son sein on trouve des corps éosinophiles.⁸ Les lésions s'étendent un peu partout dans la bouche et le patient développe une immunité.

Moniliase aiguë — Elle est essentiellement une maladie de l'enfance et l'agent causal est le *Candida* (*Monilia*) *albicans*. Les lésions caractéristiques ressemblent à un caillot de lait.⁷ Elles comportent donc une inflammation aiguë avec ulcérations.⁴

Gingivite allergique — Elle présente une inflammation aiguë avec une réponse vasculaire intense et elle peut être causée par

une certaine nourriture ou pollen, etc., incluant tout le processus de l'allergie.⁴

Gingivite aiguë non-spécifique. — Elle montre également une inflammation aiguë avec ou sans ulcérations; elle est causée par des irritants locaux des plus divers: facteurs chimiques, mécaniques, thermiques et même bactériens.⁴

Les gingivites chroniques sont encore plus variées et présentent presque toujours une réaction inflammatoire (Figure 2).

Infections gingivales spécifiques. — Dans les cas de syphilis, les chancres de la gencive peuvent être du type nodulaire, variant de forme et en relation avec plusieurs dents.⁴ Un examen microscopique révèle un processus granulomateux avec un tissu épithélioïde, des cellules géantes, et une coagulation des nécroses.⁴ Dans les cas de tuberculose, on distingue sur la gencive des masses irrégulières de tissus de granulation ayant un exsudat purulent.⁴

Il y a donc, dans ces deux cas, une inflammation granulomateuse.⁴

Dermatoses à la gencive. — Les dermatoses présentent une inflammation chronique avec caractéristiques pour chacune d'elles.⁴

1. Lichen Plan. — C'est une maladie inflammatoire caractérisée par des papilles reluisantes et violacées. Il y a une infiltration leucocytaire dans le tissu conjonctif, associée avec une dégénérescence dans la partie basale de l'épithélium. L'envahissement de l'épithélium par les cellules inflammatoires et par des fluides occasionne une dégénérescence épithéliale et une oblitération partielle de l'espace entre l'épithélium et le tissu conjonctif.⁷

2. Pemphigus vulgaris. — Le pemphigus est caractérisé par l'apparition de bulles remplies de fluide qui se développent en cycle. L'agent causal serait ou des virus ou des streptocoques.² Ces vésicules se forment d'abord dans l'épithélium ou au joint dermo-épiderme. Le fluide de ces vésicules contient des leucocytes polymorphonucléaires et des lymphocytes. La rareté relative de l'infiltration des cellules inflammatoires, soit dans le fluide, soit dans le tissu conjonctif est très subjectif, car, dans la plupart des autres maladies à vésicules, l'inflammation est intense.²

3. Erythème multiforme. — L'apparence microscopique de l'érythème multiforme n'est pas un diagnostic. On y trouve ordinairement un œdème intra-cellulaire. La dilatation des capillaires superficiels et des vaisseaux lymphatiques est prononcée dans la couche la plus élevée du tissu conjonctif; et on y trouve un degré plus ou moins varié d'infiltration de cellules inflammatoires, principalement des lymphocytes, mais aussi des neutrophiles et des éosinophiles.²

4. Lupus érythémateux. — Il est caractérisé par une hyperkératose, par une liquéfaction dégénérative de la couche de cellules basales, par une infiltration périvasculaire de lymphocytes et par une dégénérescence basophile des fibres col-

lagènes et élastiques.⁹ Dans toutes les formes de la maladie, les lésions cutanées ont une apparence semblable quoique les caractères dégénérescence soient plus prononcés et l'inflammation moins grave.²

Moniliase chronique, histoplasmosse et autres infections mycotiques. — C'est un type rare d'infection au *Candida* (*Monilia*) albicans résultant d'une lésion granulomateuse et spécifique à l'enfance. Par comparaison avec la forme aiguë d'infection, le granulome monilial se manifeste par une profonde réaction inflammatoire avec formation de tissu de granulation.⁴

L'histoplasmosse est classifiée parmi les infections granulomateuses chroniques et ne peut pas être définitivement différenciée des autres groupes spécialement basés sur des changements cellulaires. La présence de macrophages polymorphonucléaires contenant des ferments, comme des "fungi", établit le diagnostic de la maladie. Les "fungi" se trouvent dans de larges cellules mononucléaires et apparaissent comme des petits corps de forme ovale. Des infiltrations de lymphocytes et de plasmocytes peuvent s'associer avec un foyer local de nécrose.⁴

Gingivite chronique desquamative. — La gingivite chronique desquamative ne présente pas d'ulcération, mais montre un épithélium généralement mince et atrophié et souvent un œdème épithélial. La couche basale semble toujours sur le point de se rompre et il y a une infiltration dans l'épithélium de cellules inflammatoires, principalement des plasmocytes² et des leucocytes.⁴ La couche basale de l'épithélium présente un œdème intra et extra-cellulaire et une dégénérescence qui se trouve aussi dans le tissu conjonctif et dans la substance fondamentale.⁴

Gingivo-stomatite chronique de la ménopause ou gingivite atrophique sénile. — La muqueuse gingivale peut être affectée par la diminution de l'activité ovarienne qui survient à la ménopause et qui produit un

changement de base pathologique responsable de cette pathologie.¹⁰ La gencive présente une atrophie de la couche germinative de l'épithélium et une diminution de la kératinisation de cet épithélium.⁴ Glickman rapporte qu'il peut y avoir une dégénérescence de la membrane basale, du tissu conjonctif et de la substance fondamentale et en plus, une infiltration inflammatoire.⁴ Il pourrait y avoir desquamation.^{7,11}

Gingivite marginale chronique. — L'inflammation chronique est la réaction pathologique la plus fréquente de la gencive. Le moindre degré d'inflammation chronique à la gencive indique une condition pathologique qui devrait être éliminée, non seulement parce que c'est une maladie, mais parce que la négligence du traitement peut amener une destruction des tissus périodentaires sous-jacents.⁴ La gencive montre une infiltration de lymphocytes, de plasmocytes et, occasionnellement, de leucocytes polymorphonucléaires.² Les agents étiologiques seraient des irritants locaux de nature mécanique, chimique ou bactérienne.⁴

Les maladies gingivales hypertrophiques sont moins nombreuses que les gingivites et présentent moins souvent de réactions inflammatoires. Il y a d'abord les hypertrophies gingivales inflammatoires: elles peuvent être chroniques ou aiguës.⁴

Dans le cas chronique, la réaction inflammatoire est lente, progressive et sans douleur à moins d'une complication bactérienne ou traumatique. La réaction inflammatoire apporte les changements suivants: une liquéfaction et un exsudat cellulaire, un engorgement vasculaire, une prolifération du tissu conjonctif et de l'épithélium, une hémorragie et une dégénérescence du tissu conjonctif et de l'épithélium.⁴

Dans le cas aigu, il y a douleur et des lésions localisées. Ces abcès gingivaux ont un foyer purulent et présentent une infiltration de leucocytes polymorphonucléaires, un œdème et un engorgement des vaisseaux sanguins. L'abcès gingival con-

duit souvent à un abcès périodentaire qui s'étend aux tissus sous-jacents.

Les hypertrophies gingivales combinées sont des hyperplasies gingivales associées à une réaction inflammatoire. Dans ce cas, l'hypertrophie est le résultat d'une irritation locale, à la suite d'une hyperhémie, d'un œdème, d'une infiltration lymphocytaire et souvent d'une prolifération des éléments fibreux du tissu gingival. Cette prolifération peut être due à une prédisposition constitutionnelle.² Les hypertrophies gingivales conditionnées sont associées avec les conditions organiques. Il peut y avoir un dérangement hormonal, une leucémie, une déficience en vitamine C ou une condition non-spécifique.⁴

Au cours de la grossesse, l'hypertrophie gingivale consiste en une masse circonscrite de tissu conjonctif, ayant à sa périphérie un épithélium stratifié. Entre les capillaires, on trouve un stroma plus ou moins fibreux, qui présente un degré varié d'œdème et d'infiltration de cellules inflammatoires. Invariablement, ces lésions ont une zone d'inflammation prononcée, dans laquelle on trouve des lymphocytes, des plasmocytes et surtout des leucocytes polymorphonucléaires. Une zone d'inflammation aiguë est souvent sous la surface, en relation avec le bord marginal. La caractéristique principale est une prolifération endothéliale avec une formation de capillaires et une inflammation.⁴

À la puberté, l'hyperplasie attaque surtout les papilles inter-proximales. Les caractères généraux sont ceux des maladies associées à l'inflammation chronique. Une image microscopique montre une inflammation chronique avec de l'œdème et des phases dégénératives.⁴

Dans les cas de leucémie, l'hypertrophie du tissu conjonctif est infiltrée par une masse dense de leucocytes prématurés et prolifératifs: la nature spécifique de ces leucocytes fait varier le type de leucémie. Des leucocytes mûrs associés avec une inflammation chronique sont aussi présents. Les capillaires sont engorgés. Le tissu conjonctif est presque toujours œdémateux

et dégénératif. L'épithélium présente un degré plus ou moins varié d'infiltration leucocytaire avec œdème. On trouve fréquemment, sur des surfaces isolées, des inflammations nécrosantes aiguës avec une pseudo-membrane fibreuse, des cellules épithéliales nécrotiques, des leucocytes polymorphonucléaires et des bactéries.⁴

Dans les cas de déficience en vitamine C, la gencive présente une infiltration de cellules à inflammation chronique avec une réponse aiguë à la surface.⁴ Mais une déficience aiguë en vitamine C n'est pas la seule cause d'une inflammation gingivale.¹²

Dans les conditions non spécifiques d'hyperplasie gingivale, on trouve le granulôme pyogénique; la nature exacte de cette lésion n'a pas été identifiée.¹³ Ce granulôme apparaît comme une masse de tissu de granulation avec un degré varié d'infiltration de cellules à inflammation chronique.⁴

On trouve aussi de l'inflammation chronique dans l'hypertrophie de la gencive au cours du développement. Cette hypertrophie se manifeste dans la partie antérieure de la bouche. Elle est une variation physiologique dans la relation dent-gencive. Le bourrelet gingival normal, au cours de l'éruption des dents, grossit par une inflammation chronique associée avec une rétention alimentaire et une accumulation de débris.⁴

Dans les autres cas d'hypertrophies gingivales, comme dans les néoplasmes, on ne trouve généralement pas d'inflammation,⁴ ou s'il y en a, elle est secondaire.¹⁴ On rencontre aussi une hypertrophie gingivale diffuse non-inflammatoire.⁴

Après les gingivites et les hypertrophies, les maladies de gencive présentent des atrophies. Elles sont des réductions de la dimension de la gencive avec une migration de l'attachement épithélial vers l'apex. Elles ont une cause physiologique ou pathologique. L'étiologie est pathologique par traumatisme, par une position anormale des dents: ce qui peut amener un traumatisme, par une non-fonction,

dans les cas d'idiopathie et aussi par un processus post-inflammatoire, si elle a été compliquée d'une inflammation gingivale. Donc, généralement, on n'y rencontre pas d'inflammation.⁴

Les maladies du périodonte

Les maladies du périodonte se manifestent surtout comme étant chroniques et destructives. Elles sont progressives et, de ce fait, difficiles à classer. Glickman les divise en quatre groupes.⁴ D'abord les maladies du type local de destruction chronique, ensuite les maladies du type systémique de destruction chronique, les maladies atrophiques de destruction chronique, et enfin les maladies du type combiné de destruction chronique: celles-ci seraient une combinaison des trois premières avec une intensité plus ou moins variée de chacune d'elles.

Périodontite. — Les maladies du type local de destruction chronique sont appelées, périodontites, mais on leur a donné plusieurs noms.⁴ Elles sont définies comme étant des inflammations chroniques de la gencive avec la formation de clapiers, une extension de l'inflammation dans la membrane périodentaire et dans l'os, provoquant une résorption de celui-ci.⁴ La formation de poches semble être la principale phase des maladies du périodonte.

Dans la formation des poches, l'attachement épithélial peut proliférer et se dégénérer.⁴ La phase dégénérative résulte d'une infiltration de cellules inflammatoires et œdémateuses du tissu conjonctif sous-jacent.⁴ Ces clapiers contiennent un exsudat purulent composé de leucocytes dégénérés et nécrotiques, du type polymorphonucléaire surtout, de bactéries mortes et vivantes et d'une faible quantité de fibrine. On y trouve aussi des débris alimentaires à différents stades de décomposition, des toxines et des produits enzymatiques bactériens, des cellules et de la mucine, provenant de la salive et des débris de calculs.⁴

L'inflammation est le symptôme de la formation d'une poche dans le tissu con-

jonctif. Le processus inflammatoire est ordinairement chronique. Dans le tissu conjonctif, il se produit une dilatation et un engorgement des vaisseaux sanguins avec exsudat de cellules inflammatoires et œdémateuses. L'infiltration cellulaire est un mélange de lymphocytes, de plasmocytes et de leucocytes polymorphonucléaires, mais ceux-ci en moins grand nombre.⁴ Parfois, une phase sévère de dégénérescence amène la formation de foyers simples ou multiples de tissus nécrotiques.¹⁵ La réparation est le signe important du processus de l'inflammation chronique associée avec la formation des poches.

De nouvelles cellules formées dans le tissu conjonctif, des fibres et des vaisseaux sanguins s'unissent à l'infiltration leucocytaire pour former le tissu de granulation. C'est ce tissu de granulation qui a une importance considérable dans le traitement des poches péri-dentaires.⁴

La poche est gingivale si elle n'attaque que la gencive, mais, si elle se rend dans l'os, on l'appelle la poche osseuse.^{16,17} Les phases inflammatoires, prolifératives et dégénératives sont comparables dans les deux sortes de poches.⁴

La destruction des fibres gingivales sous-jacentes n'est pas obligatoire pour la migration de l'attachement épithélial. Stimulé par l'inflammation, l'épithélium peut migrer le long de la racine, sans une destruction précédente de fibres gingivales.¹⁸ La paroi épithéliale de la gencive est une faible barrière contre le passage des toxines bactériennes qui initient à une phase inflammatoire conduisant à la formation d'une poche.¹⁹ Les lésions péri-dentaires qui ont une origine purement locale commencent par une inflammation.²⁰

De ces constatations, on peut déduire que l'initiation à la formation des poches se fait en six phases qu'il serait trop long de décrire ici.⁴

Le progrès de l'inflammation de la gencive marginale aux tissus sous-jacents est un signe critique d'une maladie péri-dentaire destructive. Les opinions diffèrent concernant la façon dont l'inflammation atteint la membrane péri-dentaire et l'os

alvéolaire. Talbot,²¹ Fish²² et Black²³ considèrent que les lymphatiques dans la membrane péri-dentaire sont les chemins de l'inflammation. Selon Noyes²⁴ et Coolidge,²⁵ l'inflammation de la gencive s'étend aux tissus sous-jacents le long des fibres de la membrane péri-dentaire ou à l'extérieur du périoste de l'alvéole. Box,²⁶ Kronfeld,²⁷ Thoma et Goldman²⁸ maintiennent que la membrane péri-dentaire n'est jamais, sinon rarement, directement impliquée dans le progrès de l'inflammation gingivale au cours d'une maladie péri-dentaire. La dernière opinion semble la meilleure. Elle est supportée par les recherches de Weinmann²⁹ qui indique que l'inflammation de la gencive suit le cours des vaisseaux sanguins.

L'inflammation chronique est la condition locale la plus commune, responsable de la perte d'os dans les maladies péri-dentaires: plusieurs hypothèses ont été avancées pour expliquer le mécanisme de cette destruction d'os par l'inflammation.⁴ L'inflammation peut aussi stimuler la formation d'os. La déposition d'os associée avec une inflammation chronique est produite par une phase osseuse comme l'ostéite condensante.⁴ Microscopiquement, l'extension de l'inflammation chronique de la gencive à l'os, dans les maladies péri-dentaires, est caractérisée par une infiltration de leucocytes, par une néo-formation de vaisseaux sanguins et par une prolifération du tissu conjonctif.⁴ La destruction de l'os n'est pas nécrotique.^{30,31} La quantité d'os perdu lorsqu'il y a une inflammation gingivale est le résultat d'une prédominance de résorption osseuse sur une formation plus que le simple résultat d'un effet destructeur de l'inflammation.⁴

On trouve des destructions d'os sans inflammation gingivale. Elle semble résulter d'une activité marquée de ostéoclastes.⁴

Périodontose. — D'une façon générale, la périodontose ne présente pas d'inflammation: elle est caractérisée par une mobilité et une migration précoce. On peut remarquer une évolution assez générale dans

toutes les maladies périodentaires. Il y a toujours une destruction: mais plus il y a d'inflammation et moins de dystrophie, c'est la périodontite; plus il y a de dystrophie et moins d'inflammation, c'est la périodontose.

Atrophie. — Elle ne présente pas d'inflammation. Sa caractéristique est une résorption sans aucune complication. Mais, il faudrait noter qu'une atrophie pure, sans inflammation, ne peut pas être niée, mais elle est très rare.

CONCLUSIONS

Il est facile de constater que l'inflammation a un rôle de premier plan dans les maladies périodentaires. Dans presque tous les cas, elle se manifeste. Tantôt, elle mène au chemin de la guérison, tantôt, elle ne suffit pas à la tâche. Tantôt elle est chronique, tantôt elle est aiguë.

Quoique l'inflammation est presque toujours la première et la seule phase pathologique dans les maladies périodentaires, il pourrait bien nous venir à l'esprit qu'elle n'est pas toujours aussi nécessaire. Dans certains cas, l'inflammation peut être imposée aux tissus par des conditions constitutionnelles. L'intensité de la réaction inflammatoire varie considérablement aussi bien avec les conditions organiques du patient qu'avec la nature, l'intensité et la sévérité d'une irritation locale. Dans d'autres cas, les effets des conditions systémiques ne se manifestent pas cliniquement, à moins d'une précipitation par une irritation locale. Quoique l'inflammation soit un caractère presque général des maladies périodentaires, tous les cas des maladies périodentaires ne sont pas nécessairement les mêmes, simplement parce que la réaction inflammatoire est présente.

SUMMARY

The author has made an extensive review of the various acute and chronic conditions which may affect the gingivae

and periodontal tissues. The microscopic details of the inflammatory reaction are described for each specific lesion.

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LES ACTUALITES DENTAIRES

L'Association

LES UNIVERSITES RECLAMENT PLUS D'ARGENT

Au cours d'une conférence sur "Les universités du Canada face à une époque nouvelle", qui eut lieu récemment, on a conclu que la crise qui sévit actuellement au pays dans le domaine de l'enseignement supérieur ira en s'aggravant et que cette crise devra, à cause de son urgence, retenir l'attention des gouvernements et des universités.

Cette conférence avait été convoquée, en novembre, par la Conférence nationale des universités et des collèges canadiens.

Le représentant de l'Association dentaire canadienne était le docteur Jean-Paul Lusier, président du conseil d'enseignement.

La façon d'atténuer cette crise semble reposer sur des subventions fédérales plus considérables. La conférence a ratifié des résolutions demandant de porter à \$2.50 l'octroi annuel pour chaque étudiant, qui est maintenant de \$1.50; un octroi additionnel de \$500. pour tout étudiant en médecine, en chirurgie dentaire ou aux études graduées; \$50 millions, au cours des prochaines cinq années, pour des constructions nouvelles qui serviront à l'enseignement et aux recherches en sciences et une augmentation des sommes mises à la disposition du Conseil National des Recherches pour des bourses.

Le docteur R. F. Farquharson, le président du conseil des recherches médicales, a déclaré, durant la conférence, que le Canada aura besoin de trois ou quatre nouvelles facultés de médecine au cours des prochaines vingt années. Il a aussi entrevu la nécessité d'avoir trois nouvelles facultés dentaires d'ici 1978.

Le Canada a actuellement 20,500 médecins et il en aura besoin de 30,000 vers 1976 pour maintenir la proportion actuelle d'un médecin pour 879 personnes. La proportion des dentistes est actuellement d'un pour 3,037 citoyens.

NOMINATION A CERTAINS COMITES

Le docteur William Miller, le président de l'A.D.C., a fait part de certains changements au sein du personnel de deux comités.

Le docteur R. L. Twible, de Toronto, a été nommé membre du comité des services auxiliaires. Après la mort du docteur R. A. Rooney, le docteur H. R. MacLean est devenu président. La nomination du docteur Twible remplit les cadres de ce comité. Les autres membres en sont les docteurs R. M. LeBlanc et D. B. Ward, de Montréal, et G. C. Swann, de Calgary.

Le docteur William R. Bruce a été nommé membre du conseil des recherches pour remplacer le docteur R. D. Slater, qui a été nommé doyen de la faculté de médecine de Vermont. Le docteur Bruce fait partie du

personnel du service des recherches du département de la biophysique médicale à l'Hôpital Princess Margaret de Toronto.

Le Canada

ALBERTA

Règlements au sujet des techniciens dentaires d'Alberta.—Le gouvernement d'Alberta a ratifié les règlements au sujet du travail des techniciens dentaires certifiés. Le président du bureau des examinateurs, composé de deux techniciens, d'un dentiste, d'un médecin et du président, a déclaré que ces règlements sont sévères quand on songe qu'il s'agit de l'exercice d'un métier.

Les candidats qui désirent être certifiés comme techniciens dentaires doivent subir un examen pratique et un examen théorique sur des matières déterminées par le bureau.

Ils doivent être de bonnes mœurs, pour être éligibles, et avoir une expérience d'au moins cinq ans dans la confection des prothèses — dont deux dans la province d'Alberta. Ils doivent avoir au moins vingt-et-un ans et détenir un diplôme de collège ou son équivalent.

Le certificat de compétence, selon ces règlements, est valable pour une année seulement et doit être renouvelé en payant des honoraires de \$25. Le bureau peut exiger en aucun temps de nouveaux examens; les frais d'examen sont de \$50.

D'autres règlements touchent la réclame, défendent le versement de commissions pour obtenir des patients et limitent la superficie des enseignes à 18" x 24" avec des lettres de six pouces ou moins. Le bureau a élaboré une formule pour les certificats de santé buccale qui doivent être signés par un dentiste ou un médecin avant que les techniciens puissent traiter des patients. Les amendes maximums pour des manquements aux règlements ont été fixées de \$50, pour la première offense, à six mois de prison pour la troisième offense.

La fluoruration est acceptée et rejetée en Alberta.—Des referendums tenus à Edmonton, Calgary et Brooks n'ont pas obtenu la ma-

rité nécessaire des deux tiers en faveur de cette mesure. A St-Albert et à Athabasca, une majorité écrasante s'est prononcée en faveur de la fluoruration.

A Coaldale, la majorité en faveur de cette mesure s'est fixée à 66.76% et il y eut un débat au sujet de certains bulletins de vote qui auraient été irréguliers.

Des précédents stipulent que seuls des bulletins de vote en règle peuvent être comptés dans un referendum du genre.

A Ralston, village de la Couronne formé d'employés du gouvernement fédéral, on s'est prononcé en faveur de la fluoruration par un vote de 215-43.

La ville de Leduc a approuvé cette mesure en mars dernier, mais elle attendait les résultats d'Edmonton de qui elle achète son eau. Le conseil municipal songe à des mesures pour fluorer l'eau qui lui vient d'Edmonton.

A Calgary, comme au cours du referendum de 1957, les citoyens ont divisé également leur vote sur cette question; ceux qui ont voté contre cette mesure étaient en légère majorité.

A Edmonton, au cours du plébiscite de 1957, les citoyens s'étaient prononcés en faveur de la fluoruration dans la proportion de 64.7%; en 1959, 55.7% étaient en faveur; en octobre 1961, 61.8% étaient en faveur. Une loi provinciale exige que pour être adoptée cette mesure doit recueillir 66⅔% des votes.

Le *Herald*, de Calgary, dans une analyse qu'il a faite des votes, a trouvé que 42% des voteurs éligibles ont utilisé leur droit et que les classes de la population ayant des revenus moyens et élevés ont voté en faveur, tandis que les classes pauvres ont voté contre.

COLOMBIE BRITANNIQUE

On demande une faculté dentaire en Colombie britannique.—On a encore prié l'Honorable Bennett, premier ministre de la Colombie britannique, d'établir une faculté de chirurgie dentaire à l'Université de la Colombie britannique.

Le docteur John B. Macdonald, de la faculté de médecine dentaire de l'Université Harvard, a formulé de nouvelles propositions dans ce sens.

Le docteur Macdonald, un Canadien, avait préparé un rapport complet sur la question, il y a cinq ans, et, l'été dernier, le gouvernement l'avait invité à reviser son rapport.

L'Université a approuvé ce nouveau mémoire avant qu'il soit remis au premier ministre. La faculté dentaire qu'on propose fournirait, par année, 40 nouveaux dentistes et 20 hygiénistes. Plusieurs organismes provinciaux ont récemment demandé l'établissement d'une faculté dentaire à l'Université.

L'Association dentaire de la Colombie britannique a mené une campagne dans les journaux et ces articles ont suscité beaucoup d'intérêt pour la carrière de dentiste. On n'a pas eu de commentaire officiel au sujet de ce dernier rapport soumis au premier ministre par le docteur Macdonald.

On demande d'anciens instruments dentaires.—Le gouvernement de la Colombie britannique a décidé de restaurer une ancienne ville de mineurs et il est à la recherche d'ancien équipement dentaire. Cette ville, Barkerville, a été décrétée site historique et elle fera partie d'un parc provincial.

Elle doit ouvrir ses portes en 1962, après qu'on aura reconstruit ses principaux édifices, c.-à-d. le bureau de poste, le palais de justice, le cabinet du médecin, celui du dentiste, les anciennes maisons des mineurs, etc.

Le gouvernement provincial a demandé à l'Association dentaire de la Colombie britannique de l'aider à installer un cabinet dentaire d'autrefois.

Les médecins et les pharmaciens s'efforcent aussi, par le truchement de leurs associations, de monter de vieux bureaux et de vieux magasins.

Tous ceux qui ont en leur possession de vieux meubles, de vieux instruments ou des pièces d'équipement et qui aimeraient à collaborer à ce projet sont priés d'écrire au docteur W. R. Upton, Association dentaire de Colombie britannique, 325-925 ouest Georgia Street, Vancouver 1. On prie les donateurs de fournir auparavant une description de leurs articles, avant de les expédier, de façon à éviter le dédoublement. Le gouvernement provincial accusera officiellement réception de ces dons.

Dentiste nommé président de l'Université de la Colombie britannique.—On croit que c'est la première fois qu'un dentiste est nommé président d'une université et ce dentiste est un Canadien. Le docteur John B. Macdonald, membre associé de l'Association dentaire canadienne, est le nouveau président de l'Université de la Colombie britannique.

Le docteur Macdonald laissera ses fonctions de directeur du Forsyth Dental Infirmary et de professeur de microbiologie à l'Ecole de Médecine dentaire de l'Université Harvard pour devenir président de l'Université, le 1er juillet prochain.

Il était, avant de se rendre à Boston, en 1956, directeur du département des recherches dentaires à l'Université de Toronto.

Diplômé, en 1942, de l'Université de Toronto, le docteur Macdonald a obtenu une maîtrise en sciences de l'Université d'Illinois,

en 1948, et un doctorat en philosophie (Ph.D.), à l'Université Columbia, en 1952.

En 1955, le docteur Macdonald a préparé un rapport complet sur les besoins dentaires de la province de la Colombie britannique. L'été dernier, il retournait à Vancouver pour poursuivre cette enquête et soumettre des corollaires à son mémoire original. Il y recommandait, comme on le voit plus haut, l'établissement d'une faculté pour les dentistes et les hygiénistes à l'Université de la Colombie britannique.

Le docteur Macdonald obtint la première bourse donnée pour des recherches par l'Association dentaire canadienne. Depuis ce temps, des bourses semblables ont aidé 23 autres dentistes à poursuivre leurs études. Le docteur Macdonald, à son retour des Etats-Unis, fit partie, et, plus tard, agit comme président du comité des recherches de l'Association. Il a aussi été président du comité des recherches dentaires du Conseil National des Recherches.

ONTARIO

Le conseil de Windsor autorise la fluoration.—Selon le *Star*, de Windsor, le conseil municipal de cette ville d'Ontario vient de décider de fluorer l'eau de son aqueduc.

Le conseil avait remis cette question à plus tard pour permettre aux adversaires de la fluoration de faire circuler une requête. La nouvelle loi d'Ontario oblige les municipalités à tenir un referendum, si 10% de la population l'exige. Les opposants à la fluoration n'ont pas pu obtenir le minimum de signatures requis. On se propose de tenir un referendum sur cette question en même temps que les élections municipales de 1962, mais on va quand même commencer maintenant la fluoration.

Radiographie et photographie combinées.—Un radiologiste de Guelph, Ontario, selon le *Financial Post*, a réalisé un appareil qui peut rendre d'immenses services aux dentistes: un appareil qui sert à la radiographie et à la photographie.

Cet appareil consiste en une caméra et un miroir fixé à l'appareil de radiographie. Le miroir laisse passer les rayons, mais il réfléchit la lumière dans la caméra placée de façon à prendre des photographies qui sont superposées plus tard sur les radiographies. Le dentiste, dit l'article, en utilisant cette image double peut examiner l'os, les dents, les sinus maxillaires et les tissus mous.

La fluoruration enregistre des succès et des échecs en Ontario.—Des referendums tenus en Ontario sur la fluoruration ont, dans cinq municipalités, favorisé cette mesure et dans huit autres l'ont rejetée. Les municipalités, d'après une nouvelle loi, peuvent, par règlement ou plébiscite, autoriser la fluoruration.

Il faut y tenir un referendum quand dix pour cent des électeurs, par requête, le demandent; les municipalités doivent se conformer aux résultats de ces plébiscites qui tranchent la question par simple majorité.

Les plébiscites de décembre ont donné les résultats suivants: Whitby: en faveur, par 948-784; Atikokan, en faveur, par 1018-320; Streetsville, en faveur, par 948-427; Renfrew, en faveur, par 1434-1342; Oakville, en faveur, par 4132-3518. Les municipalités suivantes se sont prononcées contre cette mesure d'hygiène publique: Stouffville, par 716-432; Trenton, par 1734-908; Fort William, par 8806-3215; Port Arthur; Port Hope, par 1975-721; Tecumseh, par 399-252; Pembroke, par 2923-1349; King.

Le Grand Toronto tiendra vraisemblablement un referendum en 1962.

Le conseil municipal d'Ottawa a décidé de fluorurer son eau, mais comme on ne commencera qu'en juin prochain, dix pour cent des voteurs auront amplement le temps de demander un referendum.

La ville de Cornwall s'attend à avoir l'équipement nécessaire pour commencer en janvier; cette ville a décidé par règlement d'adopter cette mesure comme Burlington, qui a commencé la fluoruration, il y a quelques semaines, suivant en cela l'exemple de Port Credit et du Toronto Township.

Les côtés drôles de la fluoruration.—Il y a cette histoire du journaliste qui questionnait les gens sur la rue pour leur demander s'ils étaient pour ou contre la fluoruration. Un rustaud répondit avec emphase qu'il était opposé à cette mesure, car, disait-il, il ne pouvait pas croire les déclarations qui ne fixaient qu'à quelques sous, par personne, le coût de la fluoruration. "Qu'on ne m'en fasse pas accroire", tonnait-il. "Qu'on ne vienne pas me dire qu'on peut pour quelques sous par personne transporter de l'eau de Floride jusqu'ici!" — du *Times-Journal*, de Fort William, Ontario.

SASKATCHEWAN

Le Saskatchewan aura un plan d'assurance médicale.—La profession médicale de Saskatchewan, rapporte-t-on, a trouvé inacceptables les termes de la loi sur l'assurance pour les soins médicaux, passée en 1961.

Tous les résidents de cette province, d'après cette loi, sont obligés de s'enregistrer eux-mêmes et leurs dépendants, à défaut de quoi ils doivent payer une amende de \$25.

La loi pourvoit "au paiement de services prodigués à certains citoyens par les médecins ou autres personnes". Ces services comprennent, en plus des services médicaux spécifiés, l'anesthésie dentaire à l'hôpital et "l'anesthésie dentaire dans des départements de chirurgie désignés par la commission, quand ce service est prodigué par un médecin spécialisé en anesthésie". Sont aussi couverts par cette loi "les services dentaires prodigués par un dentiste conjointement avec la chirurgie maxillo-faciale".

Cette loi est contrôlée par une commission composée de pas moins de six et pas plus de huit membres. Un de ces membres sera le sous-ministre de la santé et au moins deux médecins. Le président de la commission pourra consacrer tout son temps à ses fonctions. Il y aura aussi un conseil consultatif de pas plus de 25 membres pour représenter les professions sanitaires et les autres organismes intéressés. Le conseil consultatif fera rapport chaque année au Ministre de la Santé. Il revisera et évaluera, tous les cinq ans, le plan d'assurance pour les soins médicaux.

Un ministre répond à un éditorial sur le fluor.—L'Hon. J. Walter Erb, ministre de la santé publique en Saskatchewan, a répondu au *Globe and Mail*, qui avait publié un éditorial sur les comprimés de fluor.

Le ministre déclare que son gouvernement ne préfère pas les comprimés à la fluoruration de l'eau d'aqueduc. Voici le texte de sa lettre:

Votre éditorial du 24 octobre, "Liberté de choix," a répété une erreur qui a fait l'objet d'observations identiques, l'an dernier, au sujet de la fluoruration de l'eau consommée par le public.

Vos deux éditoriaux donnent de faux renseignements au sujet de la fluoruration de l'eau des aqueducs en Saskatchewan. Il est vrai que le Ministère de santé publique donne gratuitement des comprimés de fluor aux parents de la campagne qui ont toute liberté d'en donner ou non à leurs enfants. Votre éditorial ne citait pas tous les faits et, pour cette raison, il était de nature à tromper les lecteurs. Le gouvernement fournit des comprimés aux enfants d'âge pré-scolaire qui vivent dans des petits centres de campagne où l'eau n'est pas canalisée, donc où on ne peut pas y mettre de fluor. L'eau de ces régions, avant que des comprimés ne soient distribués, est analysée pour se rendre compte de sa teneur en fluor. Dans certains endroits, l'eau avait une teneur en fluor satisfaisante et on n'y a pas distribué de comprimés.

Votre journal oubliait aussi de mentionner que le gouvernement de notre province croit que cette distribution de comprimés de fluor est une mesure qui s'applique seulement aux circonstances de lieux (campagnes).

Notre ministère, comme tous les autres ministères de santé du continent, est convaincu que la fluoration de l'eau des aqueducs est plus parfaite, parce qu'elle atteint plus d'individus; de plus, elle coûte moins cher et elle diminue la tâche des parents.

Il y a plusieurs petites municipalités de Saskatchewan où la distribution des comprimés a été arrêtée quand ces villes ont installé des égouts et des aqueducs.

Les villes de Saskatchewan où l'eau est fluorée ont pris cette décision sous l'égide du gouvernement provincial, qui, par ses lois, veille à la santé et au bien-être de la population.

J. Walter Erb,
Ministre de la santé publique,
Province de Saskatchewan.

TERRE-NEUVE

On suggère à la commission royale de rendre la fluoration obligatoire.—L'éditorial du *Cape Breton Post* qui paraît plus bas a été inspiré par le mémoire que la Société dentaire de Terre-Neuve a présenté devant la commission royale des services de santé, au cours d'une séance publique qu'elle tenait récemment à St-Jean:

"La Société dentaire de Terre-Neuve faisait preuve d'un esprit agressif quand elle a présenté son mémoire devant la commission royale des services de santé. Ce mémoire demandait de rendre obligatoire la fluoration de l'eau de consommation de Terre-Neuve pour combattre la carie "rampante" de cette île.

Terre-Neuve souffre d'une lacune effroyable de dentistes. La fluoration obligatoire de l'eau pour abaisser l'incidence de la carie dentaire chez les enfants n'est qu'une des mesures drastiques suggérées par la Société, mais elle est d'une extrême urgence.

La Société a demandé aussi la mise en œuvre d'un système bien conçu, bien organisé et bien administré pour les services dentaires. Elle a suggéré que des bourses soient mises à la disposition des jeunes gens pour les inciter à choisir la profession dentaire et des moyens pour porter les dentistes à exercer dans les campagnes.

Les carences de Terre-Neuve dans le domaine des services dentaires constituent un problème d'une gravité telle que cette province ne peut se payer le luxe d'une discussion académique sur la fluoration.

Des autorités clairvoyantes, à cause de la situation critique causée par la fréquence de la carie dentaire, se doivent sans tarder de régler ce problème et de fournir à la population des moyens qui l'aideront à combattre cette engeance. La même situation s'est produite quand il a fallu rendre obligatoire la vaccination contre la petite vérole; plusieurs citoyens s'opposèrent à cette mesure; ils croyaient que la vaccination leur ferait du tort, mais ils furent vaccinés quand même et eurent la vie sauve; les épidémies de vérole sont disparues."

Chronique internationale

FEDERATION DENTAIRE INTERNATIONALE

On demande de s'inscrire à bonne heure pour le congrès de la Fédération dentaire internationale.—Le programme scientifique et le programme social du treizième congrès international de la Fédération dentaire internationale prennent rapidement forme.

Le congrès auquel assistera vraisemblablement un grand nombre de dentistes canadiens aura lieu à Cologne, Allemagne, du 7 au 14 juillet prochain.

L'Association dentaire canadienne patronise un voyage en groupe du genre de celui qui a remporté un si grand succès à Rome, en 1957. La Cie Cook & Son Limitée a fait parvenir aux dentistes du Canada les détails du voyage. On peut se procurer des formules d'inscription au congrès en s'adressant au secrétariat. On trouve dans le *Journal* le programme et d'autres renseignements.

NOUVELLE-ZELANDE

La fluoration abaisse de 74% le taux de la carie. — Le *New Zealand Dental Journal* souligne qu'à Hastings, Nouvelle-Zélande, le taux de la carie a diminué de 74% après consommation de fluor.

Les enfants de cette région qui boivent de l'eau contenant du fluor depuis leur naissance ont eu 74 pour cent moins de carie après six ans et demi de fluoration, en comparaison du taux établi en 1954.

Il y avait à cette époque 24.2 dents permanentes cariées, extraites ou obturées par cent enfants; maintenant le taux est de 6.3.

Les enfants de sept ans qui ont bénéficié des effets du fluor durant presque toute leur vie montrent une réduction de 57 pour cent et ceux de huit ans, une réduction de 48 pour cent.

Les enfants de neuf ans dont les dents étaient déjà calcifiées, quand cette mesure a été utilisée, manifestent une amélioration de l'ordre de 32 pour cent.

Le nombre des enfants de cinq ans qui n'ont aucune carie a augmenté proportionnellement; il en est de même pour ceux de six ans. Ceux de sept ans, dans le même cas, sont proportionnellement plus nombreux que les autres.

Le Corps dentaire royal canadien

LE BRIGADIER BAIRD ASSISTE A UNE REUNION DES SERVICES DE SANTE D'URGENCE

Le brigadier K. M. Baird, Directeur général des Services dentaires des Forces armées du Canada, a assisté, le 20 novembre, à Ottawa, à une réunion de la Commission consultative des Services de santé d'urgence, commission dont il fait lui-même partie.

NOMINATIONS AU TITRE DE CHIRURGIEN-DENTISTE HONORAIRE DE LA REINE

Sa Majesté la Reine Elizabeth II a gracieusement approuvé la nomination du colonel D. W. Henry, C.D., B.A., D.D.S., et celle du colonel H. R. McLaren, C.D., D.D.S., D.D.P.H., au titre de chirurgien-dentiste honoraire de la Reine.

Le colonel Henry, Directeur adjoint des Services dentaires, membre du Groupe consultatif en questions dentaires de la Région militaire du Québec, fait partie du Corps dentaire depuis le mois de mai 1941, date à laquelle il a reçu son brevet de lieutenant. Nommé capitaine la même année, il a été envoyé en Grande-Bretagne au mois de

décembre 1943. Il a servi dans la 6e compagnie du Corps dentaire dans le nord-ouest de l'Europe, d'avril 1944 à novembre 1945, et il a été libéré de l'Armée au moment de la démobilisation en février 1946, puis affecté à la Réserve des officiers de l'Active. Au mois de décembre de la même année, il a été nommé à la 39e Compagnie de base du Corps dentaire, à Montréal (devenue plus tard la 53e Unité dentaire (Milice), au grade de capitaine. Il est devenu major en 1947 et a assumé le commandement de l'unité en septembre 1951, puis il a été promu au grade de lieutenant-colonel en mars 1952 et enfin à ses grade et poste actuels en novembre 1956.

Dans la vie civile, le colonel Henry est assistant professeur de prothèse dentaire à l'Université McGill et directeur des Services dentaires du département de l'hygiène industrielle de la Brasserie Molson.

Le colonel McLaren, Directeur adjoint des Services dentaires, membre du Groupe consultatif en questions dentaires de la Région militaire du Centre, a obtenu son brevet d'officier du Corps dentaire en septembre 1939. Nommé capitaine en décembre de la même année, il a été envoyé outre-mer avec la compagnie dentaire de la 1re Division. Durant son séjour outre-mer, il a été promu major et il a servi au Royaume-Uni, en Italie et en Sicile jusqu'en septembre 1944, date à laquelle il est revenu au Canada, avant d'être libéré en juillet 1945. Il s'est engagé dans la Milice (Corps dentaire) en mai 1947 et, en 1950, il a été promu au grade de lieutenant-colonel et nommé commandant de la 7e Compagnie dentaire à Ottawa. Il a été affecté à son présent poste en septembre 1954 et il est devenu colonel en août 1956.

Le colonel McLaren habite Ottawa et occupe deux postes: celui d'officier dentiste principal dans les Services de santé des Indiens et du Nord au ministère de la Santé nationale et du Bien-être social, et celui de consultant à la Division de l'hygiène dentaire des Services de santé d'urgence.

PROMOTION DU CAPITAINE BISAILLON

Le Quartier général de l'Armée annonce que le capitaine G. I. J. Bisailon a été promu au grade de major, à compter du 27 octobre.

Le major Bisailon est né à Blezard Valley (Ont.), et il a fréquenté l'école secondaire de Capreol (Ont.). Il a obtenu son B.A. au Collège du Sacré-Cœur, de Sudbury en 1942. Il s'est alors enrôlé dans l'ARC et il a servi au Canada et au Royaume-Uni jusqu'en 1946, date à laquelle il est entré à l'Université de

Montréal, où il a obtenu son diplôme de dentiste en 1951. Depuis qu'il est dentiste, il a servi dans le Corps dentaire sans interruption, dans les Régions militaires du Centre et du Québec, et il a accompli, l'été dernier, une période de service dans la 4e Compagnie dentaire de campagne en Allemagne. Le major Bisaillon est stationné actuellement au Camp Shilo. Il est marié et père de quatre enfants.

DES OFFICIERS DENTISTES SUIVENT DES COURS

Les officiers dentistes, dont les noms sont mentionnés ci-dessous, ont suivi dernièrement des cours à des universités et à des écoles de dentistes militaires.

Les majors E. M. Cobb et I. A. C. MacDonald, un cours de diagnostic, de pathologie et de chirurgie buccale à l'Université de l'Alberta.

Le major R. J. K. Pyne, un cours de radiologie buccale à l'Université de l'Alberta.

Le major W. H. Murray, un cours d'endodontie à l'Université du Michigan.

Le major D. E. McDermott, un cours de petite chirurgie buccale à l'Université du Michigan.

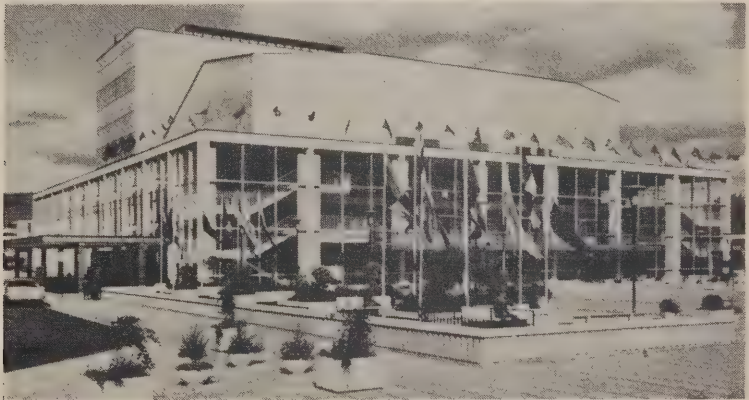
Les capitaines J. G. Boucher et F. W. Lovely, un cours de chirurgie dentaire et de chirurgie buccale générale au Royal College of Surgeons, Londres.

Le lt-col. G. McDougall, le major J. D. Bourque et le capitaine J. S. E. Boiron, un cours sur la guerre nucléaire, bactériologique et chimique au Centre d'instruction du Service de santé des Forces armées du Canada, au Camp Borden.

LE COLONEL ROGER DONNE UNE CONFERENCE

Le colonel A. T. Roger, officier dentiste commandant du Corps dentaire de la Région militaire de l'Est, a présenté un travail sur la chirurgie buccale lors des réunions des Associations de dentistes de Saint-Jean et de Moncton.

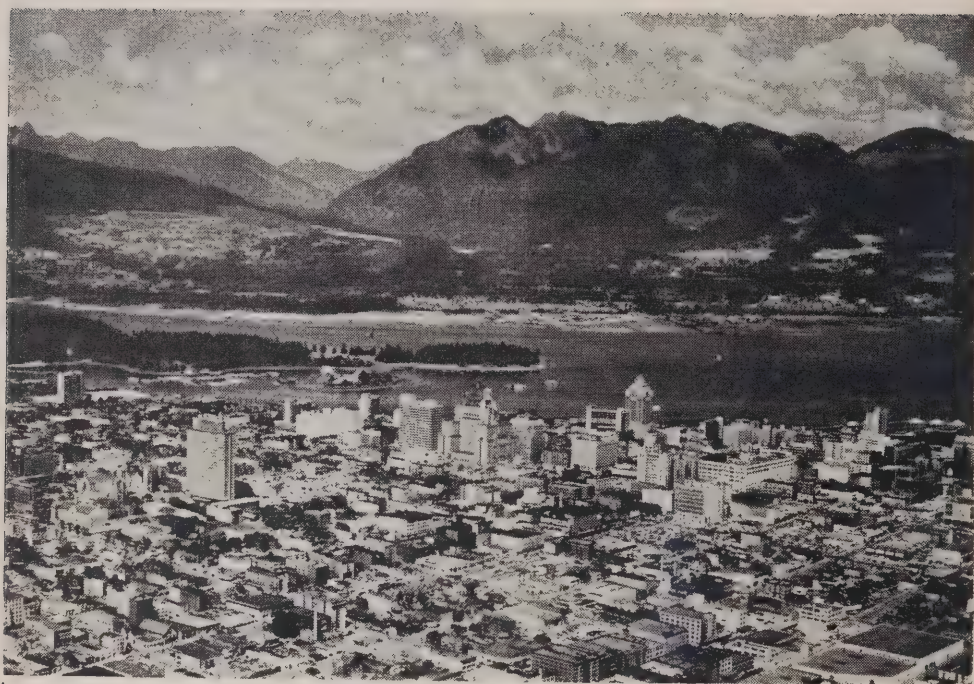
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QUEEN ELIZABETH THEATRE Frank

61st Annual Meeting
Canadian
Dental Association
June 3-6, 1962

61e Congrès Annuel
L'Association Dentaire
Canadienne
Le 3 au 6 juin, 1962



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L'ASSOCIATION DENTAIRE CANADIENNE

CONSEIL DES GOUVERNEURS: DU 30 MAI AU 2 JUIN, 1962

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An Apron for X-Ray Protection

H. G. POYTON, F.D.S., H.D.D., Toronto, Ontario*

As a general principle patients should receive the minimum x-radiation during radiographic procedures. If the precautions advocated for dental radiography are adopted, the exposure to the area under investigation is within safe limits and the dosage to the rest of the body is extremely small. In view of this latter consideration many do not think that additional body protection is necessary in routine cases. However, the effect of radiation on the gonads calls for special

consideration and although our knowledge of this aspect is incomplete, two points would seem apparent: firstly, the minimum safety dose is unknown, and secondly, the effect of radiation on the gonads is cumulative. These factors have raised the question of the advisability of "playing for safety" with regard to gonadal protection.

The most commonly used form of body protection for the patient is an apron made of rubber impregnated with lead which is suspended around the patient's neck. This undoubtedly gives excellent

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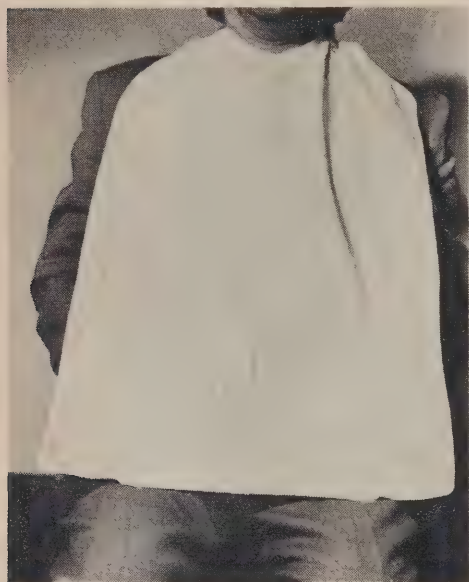


FIGURE 1



FIGURE 2

protection not only to the gonads but to the rest of the body; however, it has the disadvantage of being uncomfortably heavy, is comparatively expensive, and because of its unfamiliar nature, can cause apprehension in the mind of the patient. For these reasons many engaged in dental radiography have designed their own protective aprons.

The apron which is here described is adjustable for patients of all sizes. It is inexpensive, easily laundered, and similar to the napkin placed around the patient in routine dental treatment. It affords good protection for the gonadal region but does not protect any other area of the body.

It is made of white linen or of some other similar material. The width is $17\frac{1}{2}$ inches and the length is 25 inches. It is retained in position by a band passing behind the neck and it is adjustable to the size of the patient by means of buttons permitting different lengths of the neck band.

At the lower end on the inside is a

pocket ten inches square and open at the top edge. Before use, a sheet of lead 1 millimetre thick and 10 inches square is placed in the pocket. The apron is then placed on the patient with the lower edge resting on the thighs.

For purposes of laundering, it may be advisable to have more than one apron but of course, it is only necessary to have one sheet of lead.

The lead component of the apron was tested by exposure to a beam of 90 kilovolts at 20 milliamperes seconds at a focus-film distance of 26 inches. Exposure of the dosimeter to the direct beam without protection from the lead gave a reading of 140 milliroentgens; with the lead between the source of x-rays and the dosimeter the radiation received by the latter was unregistrable. In normal procedures it is only scattered radiation — not the direct beam — which reaches the gonads; therefore, it can be assumed that the gonadal dose received by the patient wearing this apron is negligible.

RÉSUMÉ

L'auteur décrit un tablier destiné à protéger les gonades contre les radiations émises au cours de la prise de radiographies. Le tablier s'ajuste de différentes grandeurs. Il ne coûte pas cher, il se lave facilement et il se place autour du cou du patient comme une serviette pour les traitements dentaires. Il protège les gonades, mais non les autres parties du corps.

Ce tablier est fait de coton blanc ou d'autre matériel semblable; il a 17½ pouces de largeur et 25 pouces de longueur. Il tient en place grâce à une bande qui passe derrière le cou et il s'ajuste par des boutons qui laissent un choix de grandeurs autour du cou.

Il y a dans le bas une poche de dix pouces carrés, à l'intérieur, ouverte à la partie supérieure; on place dans cette poche une plaque de plomb d'un millimètre d'épaisseur et de dix pouces carrés. On installe le tablier de façon à ce que la partie inférieure repose sur les cuisses.

On a vérifié l'efficacité de cette plaque de plomb avec un rayon de 90 kilovolts à 20 milliampères secondes lancé d'une distance 26 pouces, qui est la distance ordinaire d'un film. Un dosimètre placé directement en face de ce rayon, sans plaque de plomb, a enregistré 140 milliroentgens; le même dosimètre, caché derrière la plaque de plomb, n'a rien enregistré.

124 Edward Street

A Study of the Traumatic Bone Cyst of the Jaws

A. F. GARDNER,* D.D.S., M.S., Ph.D., S. M. STOLLER, D.D.S., and J. M. STEIG, D.D.S., Baltimore, Maryland

Traumatic bone cysts are interesting, unusual, and important; interesting, because they are often empty; unusual, because they lack a clinically demonstrable cystic membrane; and important, because they must be recognized to prevent diagnostic errors and unnecessary loss of teeth (Olech et al^{1,2}).

The traumatic bone cyst is unique in that from the histopathological aspect, it is merely an abnormal cavity in bone. It is rare when compared with some other oral pathological entities. Its aetiology and

pathogenesis are unknown; several theories, however, have been advanced. The bone cyst has been identified by a variety of names — haemorrhagic bone cyst, solitary bone cyst, traumatic bone cyst, extravasation bone cyst, and simple bone cyst. When the lesion is properly diagnosed, the treatment is relatively simple, and the prognosis is excellent.

Since the traumatic bone cyst is an important pathological condition in oral diagnosis, this investigation was undertaken to present a comprehensive study of the life history of the cyst, correlating previously reported findings with a series of twenty unreported cases.

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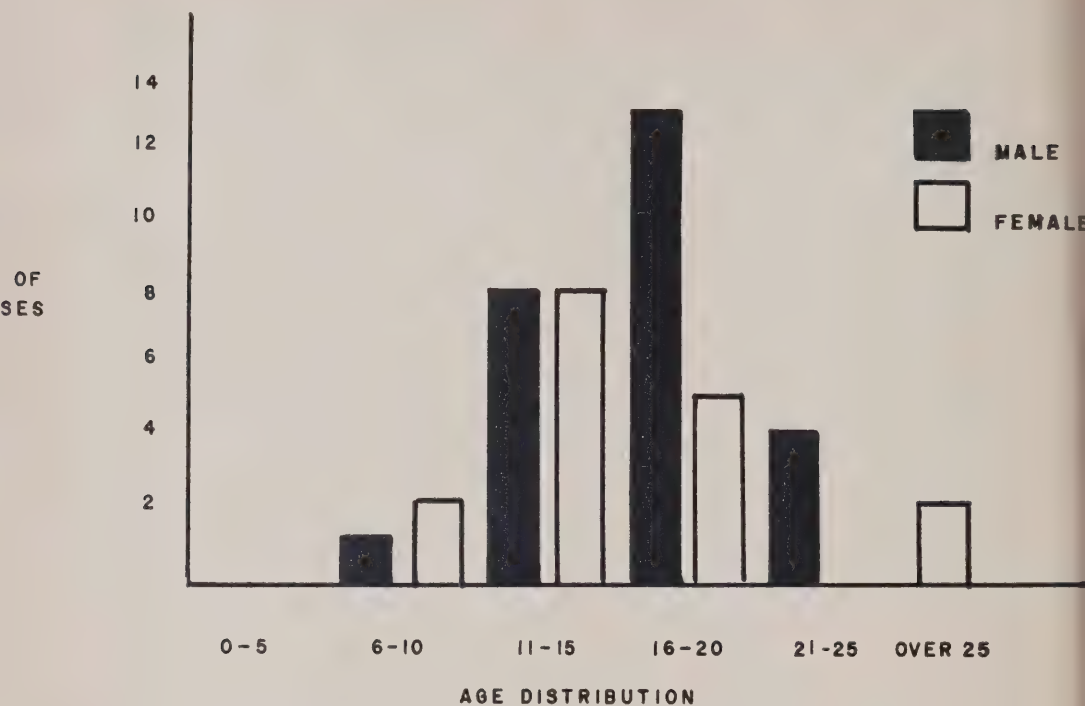


FIGURE 1 Age and sex distribution of forty-five cases of traumatic bone cysts of the jaws.

REVIEW OF THE LITERATURE

In 1929, Lucas³ presented the first report in the United States literature of the traumatic bone cyst of the jaws. This non-neoplastic lesion had been previously studied in Great Britain by Blum,⁴ who reported that the aetiology was obscure. In a rather comprehensive review of the literature from 1929 to 1961, 45 case reports were abstracted in a detailed manner in order to present sufficiently detailed information on which to base a correlation with twenty additional cases.

Definitive conclusions cannot be reached in determining the specific age group in which the traumatic bone cyst occurs because the actual age at which the lesion is discovered does not necessarily correspond to the age at which the initial

lesion occurs. Generally speaking, however, the younger age groups appear to be more commonly affected by the cyst.

Males tend to be affected more often than females. The explanation may be that generally males are subjected to traumatic injury more frequently than females. This explanation is based on the assumption that trauma is a prime aetiological factor (Figure 1).

The traumatic bone cyst has been considered to be an asymptomatic lesion. In seventeen of the 45 bone cysts reviewed, however, the patients presented themselves for dental treatment due to symptoms, most of which included pain and swelling. Twenty-seven of the 45 cases were discovered upon routine oral radiographic examination. Of the 27 cases, seven had subjective symptoms.

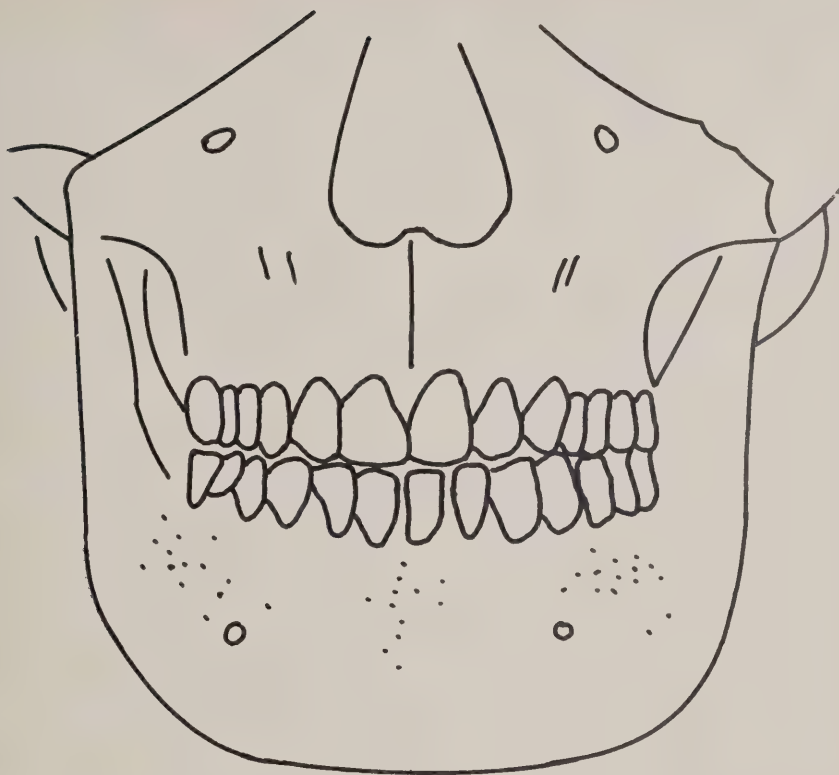


FIGURE 2 Dots denote approximate locations (centres) of bone cysts.

There are no symptoms in the initial stages of the traumatic bone cyst. Expansion does not occur in the early stage since only the spongy medullary bone is involved. When the bone cyst progressively enlarges, it may reach the cortical bone. Pressure is exerted upon the cortical bone causing resorption and expansion and a deformity may be evident in the area.

Pain or paraesthesia may occur when the inferior alveolar nerve is involved by the expansion or growth of the cyst (Bennett et al⁵). In the more advanced cases, the cortical bone may be perforated with the formation of a sinus tract between the cyst and oral mucosa.

Of the twenty-four cases that presented symptoms, 21 showed swelling. Eight of

the 21 cysts had accompanying pain. One case had paraesthesia at the corner of the mouth. Two cysts were accompanied by extruded teeth in the region of the bone cysts. Two cysts presented sinus tracts.

The majority of traumatic bone cysts are located in the mandible. Of the 45 cases reviewed, only two occurred in the maxilla. Fifteen were located in the left mandible; 18 were located in the right mandible; and 10 were present in the symphysis of the mandible (Figure 2). Assuming that trauma is an important aetiological factor, these findings can be correlated with the fact that the mandible is probably subject to more trauma than the maxilla.



FIGURE 3 Scalloping around the apices of bicuspid and molars.

The traumatic bone cyst presents a radiolucent area within the maxilla or mandible. The cyst has a definite outline, but there is generally an absence of a peripheral radiopaque line representing sclerotic bone. Jacobs⁶ reports that the bone surrounding the lesion appears similar to cortical bone, or sometimes, sclerotic bone. However, the longer the cyst remains untreated, the greater the opportunity there is for the sclerotic reaction to develop in the surrounding bone.

The area does not involve teeth, but it generally shows a scalloping around the roots of the teeth (Figure 3).

The radiograph will demonstrate expansion of cortical bone after all of the supporting medullary bone has been destroyed. The cyst may appear to be a multilocular radiolucent area because constricted areas within the bone appear more radiolucent (Jacobs⁶).

The cysts ranged in size from a small radiolucent area one centimetre in diameter to a large area including the region from the cuspid to the lingula and from the alveolar crest to the inferior border of the mandible.

The most important factors in arriving at a correct diagnosis are the radiographic findings and a history of trauma (Blum⁷). The radiographic findings and histories of trauma are not always consist-

ent; therefore, other diagnostic factors must be taken into consideration in arriving at a differential diagnosis.

Of the forty-five cases reviewed, there were 32 positive histories of trauma. All of the involved teeth were vital unless devitalized by conditions such as caries and traumatic injuries. These nonvital teeth showed no connection with the cystic cavity.

When a radiolucent area is a true traumatic bone cyst, the dentist generally finds the following conditions: (1) a dark blueish zone is usually visible after reflection of the soft tissue and periosteum, (2) the cystic cavity is either empty or contains blood or fluid, (3) it may or may not have a grossly visible lining or membrane, and (4) in most large traumatic bone cysts of the mandible the inferior alveolar nerve is exposed on the floor of the cavity or lies within the cavity (Rush-ton⁸).

Of forty-five cases reviewed, 15 were empty, while 23 contained fluid or blood. A few cysts were reported to contain granulation tissue or an unorganized blood clot.

There are several pathological conditions which must be taken into consideration before arriving at a definitive diagnosis. The lesions that must be considered in a differential diagnosis include periapical lesions, follicular cysts, radicular cysts, embryonic defects, ameloblastoma, peripheral giant-cell reparative granuloma, and the central giant-cell tumour. A mandibular embryonic defect is difficult to differentiate from the traumatic bone cyst (Jacobs⁶). The defect generally presents a circumscribed radiolucent area occurring below the mandibular canal from the angle of the mandible to the first molar area. The traumatic bone cyst originates superior to the mandibular canal. The peripheral giant-cell reparative granuloma presents a variable gradation in radiographic density (Jacobs⁶). The lesion gradually merges into bone showing no line of demarcation between the lesion and the surrounding

bone. The radiograph may show the presence of bony septa. A sharp demarcation separates the traumatic bone cyst from the surrounding bone which is usually of uniform density. The central giant-cell lesion (Olech et al¹, Jacobs⁶) of hyperparathyroidism and the giant-cell reparative granuloma are radiographically similar. In the former the serum calcium is increased, and the serum phosphorus is decreased. In the traumatic bone cyst the disturbance is localized; the blood chemistry is normal.

Although the aetiology of the traumatic bone cyst is unknown, a number of theories have been proposed, of which the most widely accepted is that of intramedullary haemorrhage following traumatic injury.

Pommer⁹ believed that the initial cause of the haemorrhage was trauma sufficient to create a focus of intramedullary haemorrhage which became encapsulated. Jacobs⁶ believed that the cause of the progressive enlargement of this lesion was the result of increased pressure and distension due to transudation. Although the theory of intramedullary haemorrhage is widely accepted today, Whinery¹⁰ believes that the subsequent expansion of the cyst is due to pressure exerted by gas and not by liquid. There can exist no doubt that the cysts enlarge while filled with gas and not with a liquid or tissue (Whinery¹¹).

If one assumes that the theory of intramedullary haemorrhage is correct, the question arises as to why these cysts do not form after a fracture of the jaws. Proponents of Pommer's theory state that as soon as the periosteum is torn during a fracture, the possibility of closed pressure is removed.

Of the forty-five cases reviewed there was a definite recollection of severe trauma to the involved area in 32 patients. Although trauma was present in a high percentage of the cases studied, there still remains one unanswered question: What is the cause of the lesions in which there was no trauma?

The theory of cystic degeneration of bone tumours resulting in the bone cysts has not been generally accepted since it has been considered a doubtful explanation (Whinery¹¹). Thoma^{12,13} considered the possible relation of the central benign giant-cell tumour to the traumatic bone cyst. Since the structure of the bone cyst is closely related to the giant-cell reparative granuloma, the above theory cannot be discounted.

The theory of origin from faulty calcium metabolism (Whinery¹¹) stems from the fact that such a metabolic disorder produces radiolucent areas termed 'osteitis fibrosa cystica' that appear radiographically similar to the traumatic bone cyst. Of the forty-five cases reviewed, one showed a low inorganic serum phosphorus level, but the majority showed a normal serum calcium and phosphorus level. Lesions associated with faulty calcium metabolism present a different histological picture from that of the traumatic bone cyst. It is doubtful, therefore, that the traumatic bone cyst is the result of faulty calcium metabolism.

Another theory of origin proposes a necrosis of fatty marrow due to ischaemia (Whinery¹¹). An inadequate blood supply produces necrosis of the fatty bone marrow resulting in a traumatic bone cyst. In the young age groups where the bone cyst is common, there is a minimal amount of fatty marrow and an adequate blood supply present. Prolonged ischaemia, therefore, is not probable because collateral circulation is readily established in the mandible, the only bone with a central blood supply.

The theory that the cyst is the end result of a low-grade chronic infection is quite improbable as there is rarely evidence of inflammation in the wall of the traumatic bone cyst (Whinery¹¹).

Osteoclasia resulting from a disturbance of circulation brought about by trauma has been associated with the bone cyst (Whinery¹¹).

Post-extraction trauma has been reported to cause intramedullary haemorr-

hage in otherwise healthy bone and results in a traumatic bone cyst (Bennett et al⁵). Other predisposing causative factors are operating at the same time as the trauma. Seldin¹⁴ reported that a possible basis for such a condition might be a severe blow in the region of a partially healed extraction, where bleeding occurs in the still friable granulation tissue and no exit for drainage exists because external healing of the mucous membrane is complete.

There is some belief that the cyst originates from embryonic defects. In the third foetal month, accessory cartilages appear in the mandible in connection with primary membrane bone, the condylar, coronoid, and two nuclei at the symphysis. It is possible that a cavity could result and persist from a failure of normal deposition of bone in the region formerly occupied by cartilage (Stafne¹⁵). In embryonic development the condylar cartilage persists until birth, while all of the other cartilage degenerates. Degeneration of the condylar cartilage without bone deposition may give rise to many of the bone cavities found in the ramus area.

Olech et al² reported that the cysts seem to form after traumatic injury to bone where spongy bone containing haemopoietic marrow is enclosed by a bony compact cortical layer.

When the expanding traumatic bone cyst reaches the compact cortical layer of bone, further expansion is severely retarded because the undermining resorption starts with mobilization of osteoclasts in the connective tissue of Haversian canals. This slow rate of progress may partly explain the lack of gross enlargement of involved bone (Olech et al¹). Only a failure of an early organization of the clot and the subsequent liquefaction of the clot can give rise to the eventual formation of a traumatic cyst. The crucial point, therefore, is the explanation of this failure (Olech et al²).

The first evidence of organization of a blood clot is the proliferation of fibroblasts and capillary endothelium. The proliferating capillaries grow from the sur-

rounding tissues into the clot. They meet other capillary buds and thus establish circulation. The result is the formation of granulation tissue.

Blum^{16,17} believes that the innermost layer of the bone cyst consists of a more or less altered blood clot and, in some cases, a homogenous hyaline mass with cell debris and masses of blood pigment. Traumatic bone cysts are not encapsulated with the epithelial-lined wall that surrounds odontogenic cysts. There is a thickness of fibrous connective tissue or granulation tissue lining the traumatic cyst cavity. Occasional foreign-body giant cells have been found in the connective tissue wall (Bennet et al⁵). Thoma¹³ believes that the bone adjoining the cystic membrane shows evidence of lacunar resorption and peripheral apposition of bone. The bone marrow is more cellular and more fibrous than normal, with evidence of stasis in the enlarged vessels and occasionally an inflammatory filtrate.

The most common treatment of the traumatic bone cyst is a relatively simple surgical procedure (Blum¹⁸). The cystic cavity is surgically exposed, evacuated of any fluid or semi-fluid contents, and curetted to produce haemorrhage. This procedure provides a fresh blood clot which is in contact with the connective tissue of the flap. Circulation is re-established, and organization of the blood clot occurs. This procedure generally leads to eventual complete replacement of the bone cavity resulting in a normal osseous structure.

Efforts are often made to assist the normal healing process by treating the cavity with the absorbable and non-absorbable absorbents and frequent postoperative irrigations (Pimenova¹⁹, "Symposium"²⁰, Thoma²¹).

In the larger lesions, banked, frozen-dried homogenous bone grafts have been employed successfully. This procedure was first developed in the treatment of radicular and dentigerous cysts (Boyne²²).

Boyne also reports that the main advantage of using the bone grafts is that it eliminates the need for postoperative

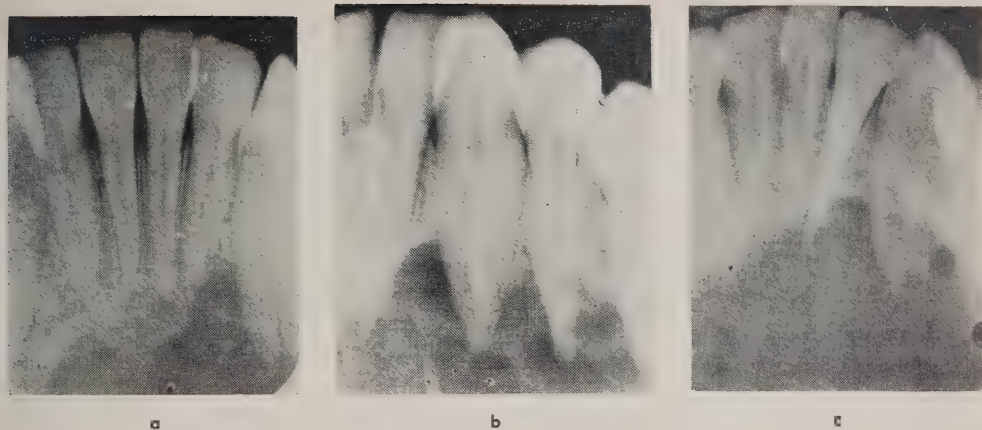


FIGURE 4 Preoperative and postoperative radiographs of a traumatic mandibular bone cyst reported in this investigation are depicted in Figures 4 and 5. Figures 4 (a, b and c) are preoperative radiographs of the anterior aspect of this large traumatic bone cyst.

treatments. It also aids in maintaining normal bony contour of the area. Healing appears to take place more rapidly than with the simple surgical procedures.

EXPERIMENTAL METHODS

Twenty case reports were investigated during the course of this study. Clinical history, location, age, sex, radiographic features, histopathology and treatment were evaluated in all cases. All except three cases were complete with biopsy reports. These cases were compiled, analyzed and compared with similar cases reported in the literature.

OBSERVATIONS

The age distribution of patients with traumatic bone cysts studied in this investigation ranged from eleven to fifty-six years. The median age was eighteen years. Although the age range was rather large, the majority of the cysts were diagnosed in the late teens and early twenties.

Males were found to be affected more frequently than females. Of the twenty

cases reported, six were females and fourteen were males.

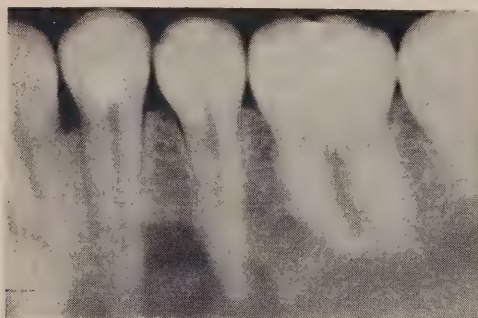
Fifteen of the cysts were diagnosed by routine radiographic examination. Three patients presented themselves because of symptoms. One cyst was found after the extraction of the second and third molars, and in another the method of diagnosis was obscure.

Of five cysts presenting symptoms, only one produced pain, and four resulted in clinically evident swellings.

The lesion was predominantly located in the mandible. Only two of the cysts were observed in the maxilla. The location of the mandibular cysts was as follows: (1) four in the anterior mandible, (2) five in the right molar area, (3) two in the right bicuspid area, (4) one in the left molar area, (5) four in the left bicuspid area, and (6) two in undisclosed areas (Figures 4 and 5).

The teeth adjacent to ten of the cysts were tested for vitality. Only one tooth tested was non-vital. Therefore, the majority of teeth adjacent to traumatic bone cysts were vital.

Traumatic injury was considered in eight cases and was discussed as an aetiological factor. Five of the twenty cysts



a



b



c

FIGURE 5 The same lesion illustrated in Figure 4. (a) Periapical radiograph of the posterior extent of the cyst. (b) Occlusal radiograph showing expansion of the lingual alveolar plate. (c) Occlusal radiograph showing the vertical extent of the cyst.

presented a history of traumatic injury.

Preoperative diagnoses were reported on fourteen cysts. Ten of the preoperative diagnoses were traumatic bone cysts, and four were incorrectly diagnosed. The incorrect diagnoses were giant-cell tumour, ameloblastoma, and radicular cyst.

The contents of seventeen cysts were disclosed after surgery. Eleven contained blood-tinged or clear fluid, three contained soft tissue, and three were devoid of contents.

The treatment consisted of opening into the bone cavity, evacuation of any contents, curettage to induce haemorrhage, and surgical closure. Two cysts were treated with frozen-dried bone grafts. One cyst was packed with autogenous bone chips; however, this treatment resulted in failure of normal healing. It was subse-

quently reopened, and a plastic drain was inserted until healing was evident.

DISCUSSION

The traumatic bone cyst occurs predominantly in males during the adolescent and young adult years. Assuming that trauma is a major aetiological factor, it is logical to assume that the young males have a greater incidence of this lesion because of their participation in sports and in other activities requiring bodily contact. The occasional lesions found in the older adult age groups are likely cysts of long standing that have gone unrecognized but which were initiated during an earlier period of life. The age and sex distribution in this investigation corres-

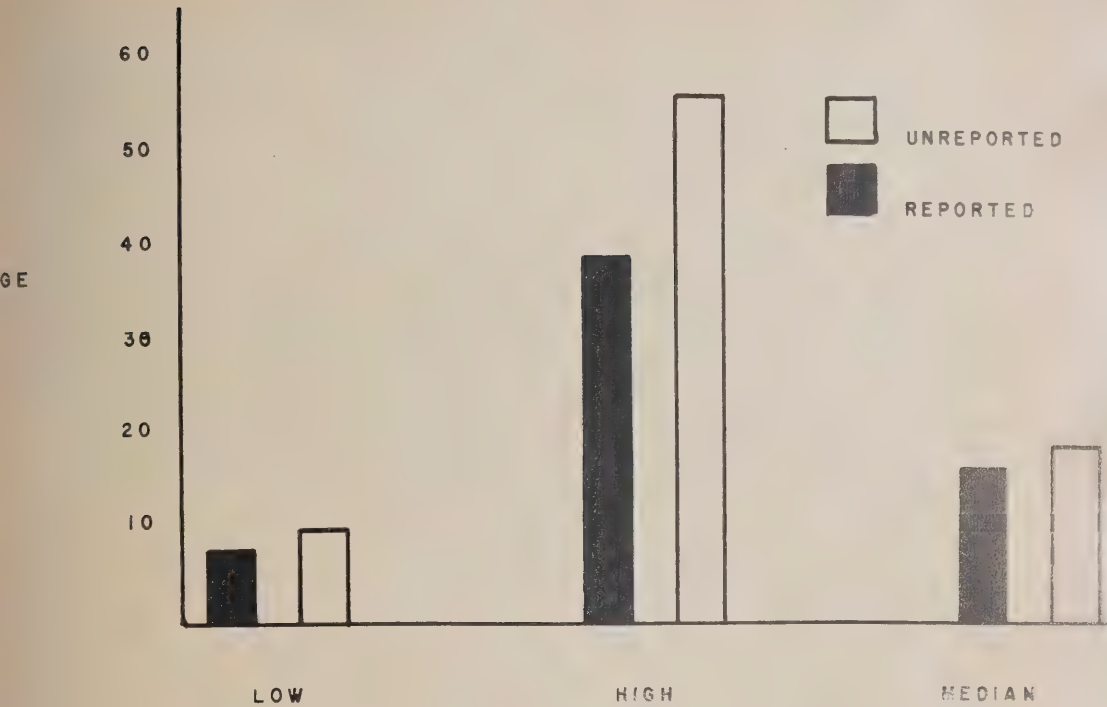


FIGURE 6 Comparison of low, high, and median ages of patients with traumatic bone cysts in forty-five reported cases and in twenty unreported cases.



FIGURE 7 Comparison of male and female patients with traumatic bone cysts in forty-five reported cases and in twenty unreported cases.

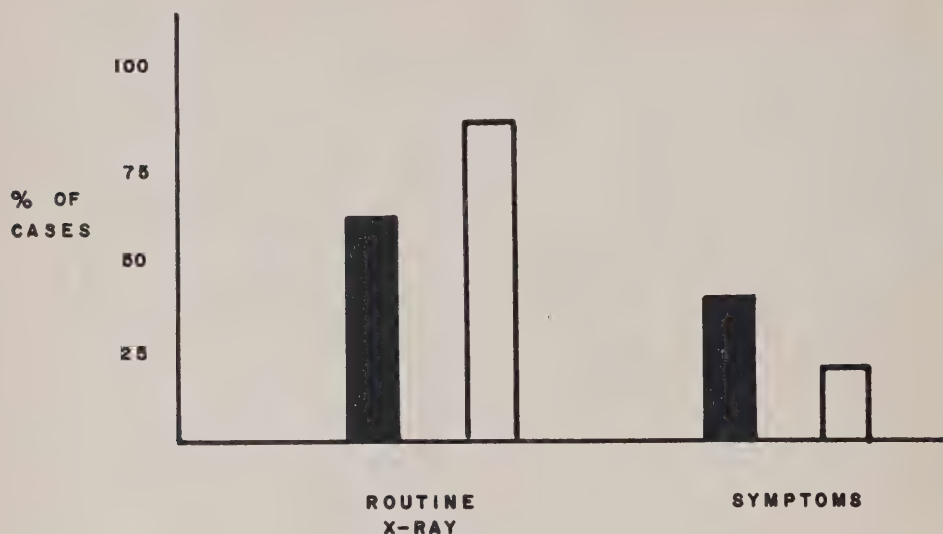


FIGURE 8 Comparison of the recognition of traumatic bone cysts by routine radiographic examination and by the presentation of symptoms by the patients in forty-five reported cases and in twenty unreported cases.

ponds closely with the findings reported in the literature (Figures 6 and 7).

In the majority of cases of bone cysts the patient is unaware of the presence of the lesion until it is diagnosed in routine full-mouth radiographic examination and brought to the patient's attention. A higher percentage of cysts reviewed in this investigation were discovered by routine radiographic examination than the cysts reported in the literature (Figure 8). This finding was probably coincidental, and if a greater number of cysts were reviewed, the findings would probably be comparable to those previously reported in the literature. It is conclusive, however, that the majority of these lesions were discovered upon routine radiographic examination. This fact points out the importance of a complete oral radiographic examination of all dental patients (Figures 9a, b, and c). After traumatic injury the affected area should be periodically checked by radiographs to detect the possibility of any resultant or residual pathosis.

There is no doubt that the mandible is affected more frequently than the max-

illa. This investigation reports a higher percentage of cysts in the maxilla compared with the incidence of maxillary cysts reported in the literature (Figure 10). For an undisclosed reason the right side of the jaws is affected more frequently than the left side (Figure 11). This unilateral distribution is difficult to explain. Whether or not a greater incidence of trauma occurs to the right side of the jaws has not been established by this investigation. Another frequent site of the bone cyst is the anterior region of the mandible; this fact is probably due to the greater vulnerability of this region of the jaw (Figure 11).

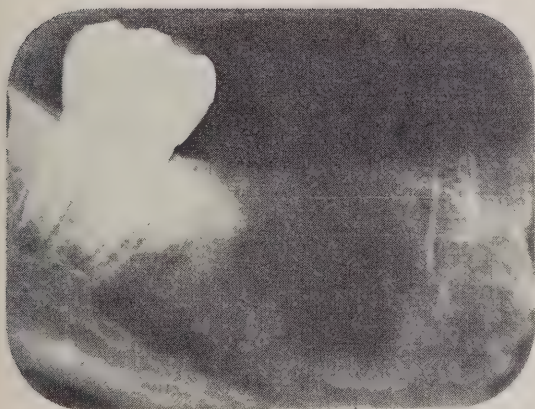
It is interesting to speculate that in spite of a traumatic blow producing the traumatic bone cyst of the jaw, the teeth remain perfectly unharmed, and this fact appears to reaffirm the great resistance of the teeth to traumatic injury. However, trauma devitalizes many teeth without inciting a traumatic bone cyst. The importance of testing the vitality of teeth before attempting to diagnose this lesion preoperatively cannot be overemphasized.



a



b



c

FIGURE 9 Radiographs of another case of anterior and posterior traumatic mandibular bone cysts, reported in this investigation, before surgical treatment. The lamina dura has been lost in some periapical areas. (a) Lateral jaw plate showing anterior and posterior traumatic bone cysts. (b) Periapical radiograph showing a cyst in the bicuspid area of the left mandible. (c) Periapical radiograph showing a cyst in the anterior part of the mandible.



FIGURE 10 Comparison of the location of traumatic bone cysts in the mandible and in the maxilla in forty-five reported cases and in twenty unreported cases.

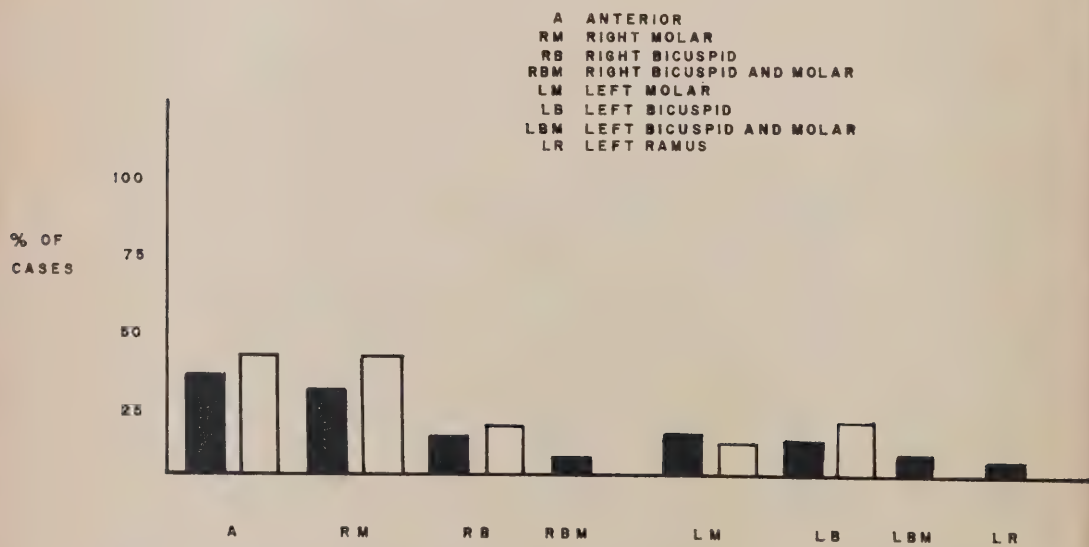


FIGURE 11 Comparison of the areas of the mandible involved by the traumatic bone cysts in forty-five reported cases and in twenty unreported cases.

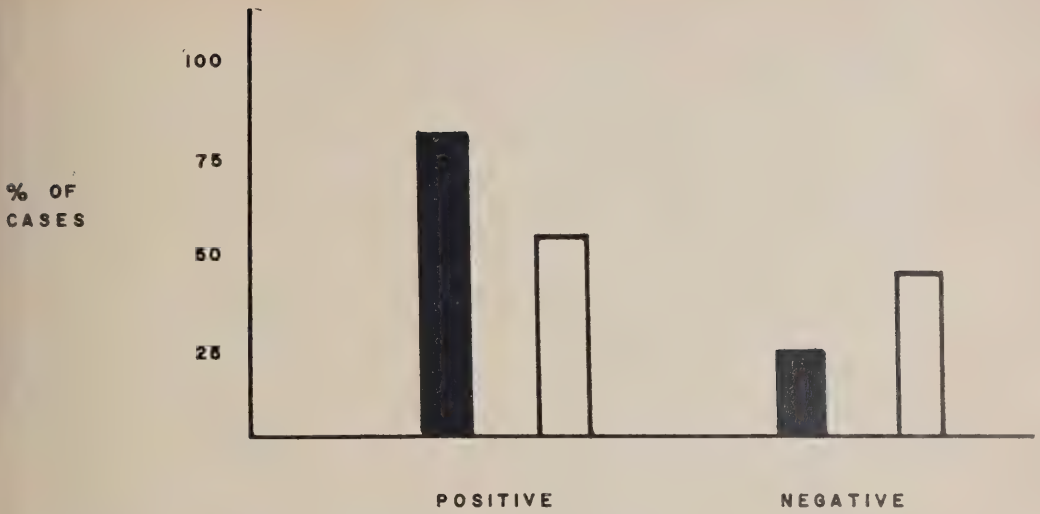


FIGURE 12 Comparison of positive and negative histories of traumatic injury to the area of the traumatic bone cysts in forty-five reported cases and in twenty unreported cases.

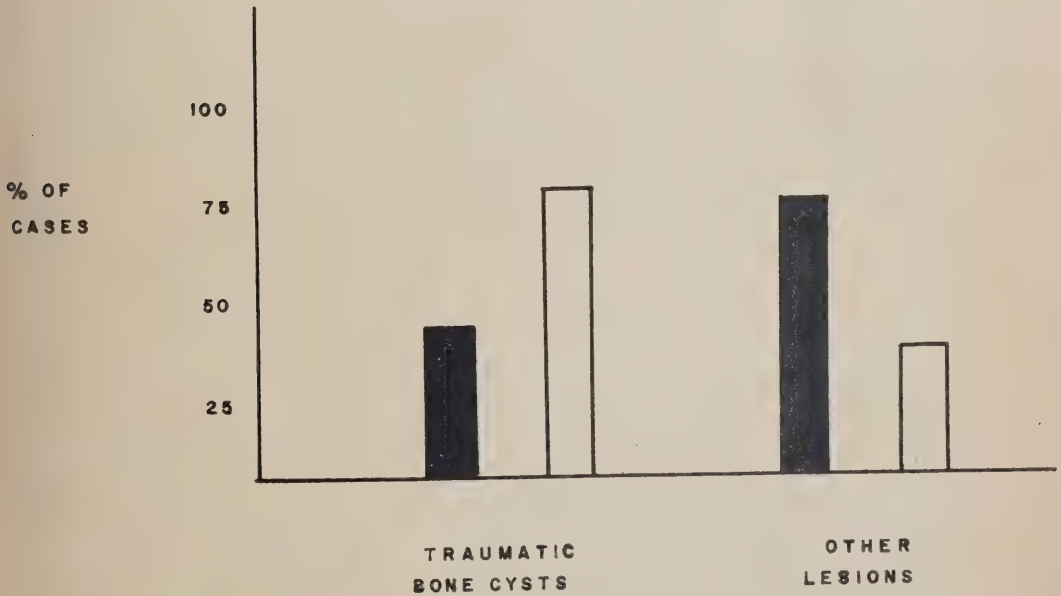


FIGURE 13 Comparison of preoperative diagnoses of traumatic bone cysts and of other lesions in forty-five reported cases and in twenty unreported cases.

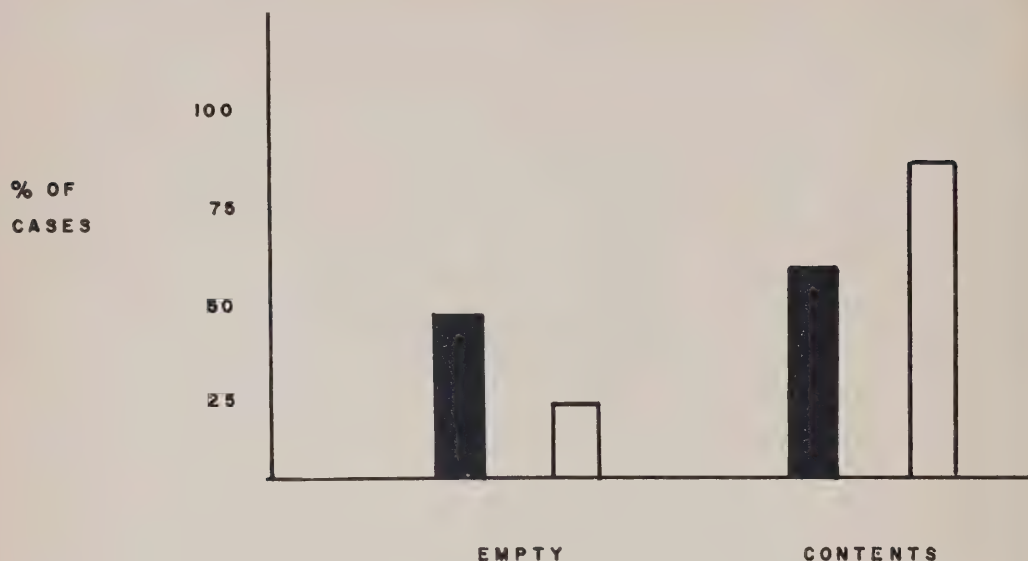


FIGURE 14 Comparison of the finding of contents or of an empty cavity upon surgical opening of the traumatic bone cysts in forty-five reported cases and in twenty unreported cases.

The fact that most patients with a traumatic bone cyst give a history of trauma to the jaws does not completely validate the aetiological theory of trauma followed by intramedullary haemorrhage. This causal relationship is still unproven. On the other hand, this investigation reports relatively fewer histories of trauma when compared to the incidence of trauma reported in the literature (Figure 12). The ratio of positive and negative traumatic histories found in this investigation points out the possibility of aetiological factors other than trauma. The finding of these other aetiological factors is a subject for future investigation.

It is recognized that the true aetiology of the traumatic bone cyst is unknown. The only theory that possibly explains a true traumatic or haemorrhagic bone cyst in normal healthy bone is that of intramedullary haemorrhage. The other theories require that some pre-existing disturbance be present, not necessarily

including trauma and/or haemorrhage. It is possible that some of these less popular aetiological theories are also valid, thus giving rise to lesions simulating the so-called traumatic or haemorrhagic bone cyst, but whose pathological processes may not be the same.

Considering all of the possibilities, this investigation agrees with that of Whinery¹¹ that until a definite aetiological agent is found, the term traumatic or haemorrhagic bone cyst is unsatisfactory, and that the lesion is better named or described as progressive bone cavities or simple bone cysts.

Assuming the theory of intramedullary haemorrhage to be valid, the main factor in the formation of the bone cyst is the failure of normal organization of the blood clot. It is believed that a possible explanation for the failure of normal organization of the clot is as follows: When intramedullary haemorrhage occurs, two processes simultaneously take place. The

marrow and bony trabeculae become necrotic due to the circulatory disturbance, and an attempt at organization is made. The capillaries of the remaining vital tissue proliferate in an attempt to establish circulation with the surrounding vital tissue. The surrounding tissue, however, rapidly undergoes necrosis. A barrier of necrotic tissue is thus established between vital tissue and the organizing clot. Circulation cannot be established, and the clot undergoes liquefaction, thus giving rise to the bone cyst.

If the jaws are fractured upon injury, organization of the blood clot will take place because circulation can more easily be established through the broken periosteum.

This investigation reveals a smaller percentage of preoperative diagnostic errors compared to errors reported in the literature (Figure 13). The cysts reviewed by this investigation were of more recent date than those reported in the literature. This fact appears to support the premise that in recent years greater advances have been made in preoperative diagnostic procedures.

Jacobs⁸ stated that the traumatic bone cyst is a great imitator. Many lesions are radiographically very similar to the traumatic bone cyst. Before any radical surgical procedures are performed, a detailed effort must be made in order to arrive at a definitive diagnosis. A detailed history is quite valuable, but a positive diagnosis is made only when the lesion is biopsied and confirmed by histological examination.

The majority of cysts contain blood, serous fluid, soft tissue, or debris within the lumen (Figure 14). The fact that the cyst is empty or contains fluid or tissue is not pathognomonic in the identification of the lesion. If the contents and wall are microscopically examined, the pathologist's report will provide a definitive diagnosis in conjunction with the history, radiographs, clinical symptoms, and operative findings.

The simplest phase in the life history of the traumatic bone cyst is its treatment.

The usual treatment is opening into the bone cavity, evacuation of any contents, curettage to promote haemorrhage, and surgical closure of the wound. This simple method is the treatment of choice in all bone cysts. There is, however, some value in placing bone chips in the larger traumatic cysts to accelerate the healing process. The main biological objective in treatment is to create a new blood clot in contact with healthy connective tissue and bone so that the clot will rapidly organize and healing will promptly result.

SUMMARY AND CONCLUSIONS

1. The traumatic bone cyst occurs mainly in young males with a mean age of eighteen years.
2. The lesion is usually discovered by routine radiographic examination, clinical symptoms generally being absent.
3. The mandible is affected more frequently than the maxilla.
4. The anterior mandible and right body of the mandible are the principal sites of the lesion.
5. The bone cyst does not involve the nerve supply to the teeth, nor does the cyst affect the vitality of the pulps.
6. Trauma appears to be a great factor in the aetiology of the bone cyst although it cannot always be confirmed by an adequate history.
7. The treatment is relatively simple, and the prognosis is excellent after surgical intervention.

RÉSUMÉ

Les kystes traumatiques se rencontrent surtout dans les maxillaires des jeunes hommes, en moyenne vers l'âge de 18 ans. Ces lésions osseuses se découvrent habituellement au cours d'un examen radiologique de routine, puisque ces kystes ne manifestent généralement pas de symptômes cliniques. La mandibule est plus fréquemment le site de ces lésions que le maxillaire; on les rencontre surtout dans la partie antérieure et dans le corps de l'os. Ces kystes n'affectent pas les branches nerveuses, ni la vitalité des dents. Un

traumatisme est ordinairement la cause de ces kystes osseux, quoique l'histoire de cas ne les mentionne pas toujours. Le traitement de ces kystes est simple et le pronostic, après l'intervention chirurgicale, est favorable.

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RESEARCH ANNOTATIONS

STAINING OF RIBONUCLEIC ACID

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Ribonucleic acid (R.N.A.) is a substance of fundamental significance in cell synthesis of protein and complex polysaccharides.¹ Morphological identification of

R.N.A. is important for the interpretation of cell activity; and conversely, it greatly facilitates the localization and identification of certain cells, such as plasma cells, which are active protein synthesizers.

Plasma cells are constituents of normal human gingiva, and become more numerous and widespread in most abnormal periodontal conditions.

Staining of R.N.A. is accomplished by utilizing basic dyes to bind to the phos-

Summaries of reports delivered at the First Canadian Conference on Dental Research held at Toronto, October 30-31, 1961.

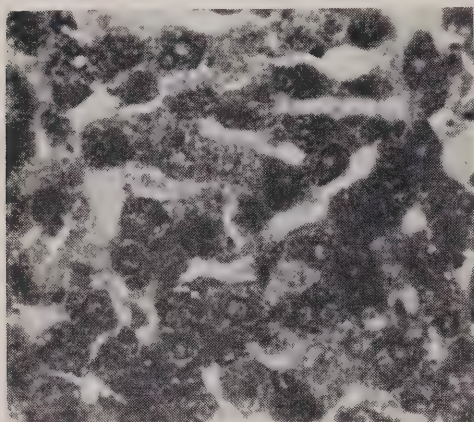


FIGURE 1 Section of liver fixed for 24 hours in acetic alcohol formalin and stained by the P.A.S. reaction. Mag 250X.

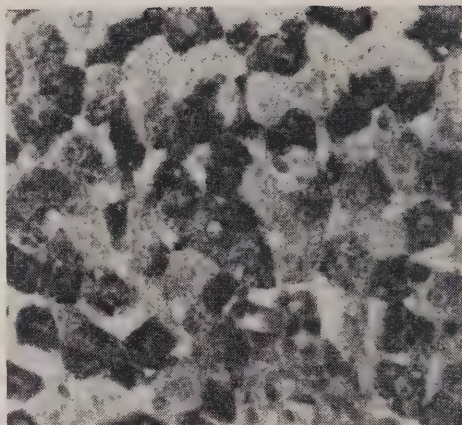


FIGURE 2 Section of liver fixed for 3 months in acetic alcohol formalin and stained by the P.A.S. reaction. Mag 250X.

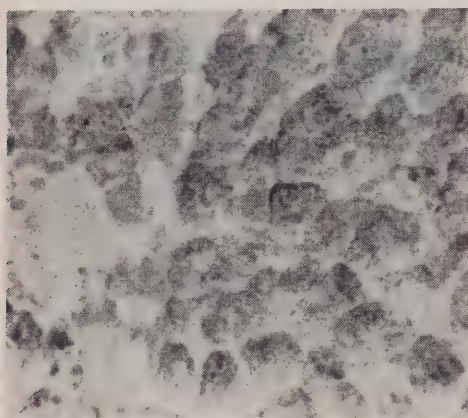


FIGURE 3 Section of liver fixed in Bouin's fluid for 24 hours and stained by the Best carmine method. Mag 250X.

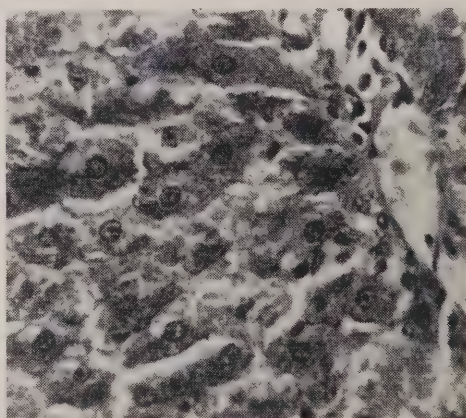


FIGURE 4 Section of liver fixed in Bouin's fluid for 3 months and stained by the Best carmine method. Mag 250X.

formalin, 10 per cent formalin, formol saline, alcohol formalin, acetic alcohol formalin, Bouin's, Carnoy's and Rossman's fixatives for the following times: 24 hours, 48 hours, seven days, two weeks, one month and three months. Sections were cut from those specimens and stained by the P.A.S. and the Best carmine method for glycogen.

It is concluded from these experiments that if the tissues are fixed in acetic alcohol formalin, consistently good results will be obtained with the P.A.S. stain to demonstrate glycogen in livers which have been stored in this fixative up to a period of three months (Figures 1, 2). Nearly as good and consistent results can also be obtained with the Best carmine stain, if the

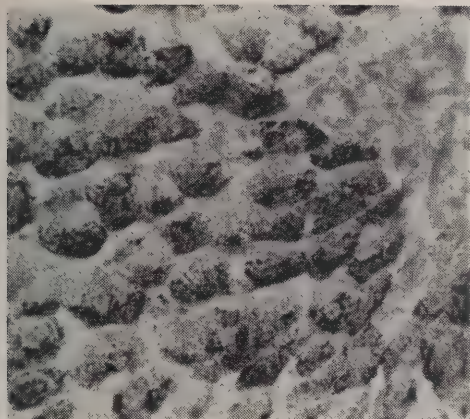


FIGURE 5 Section of liver fixed in 10 per cent formalin for 24 hours and stained by the P.A.S. reaction. Mag 250X.

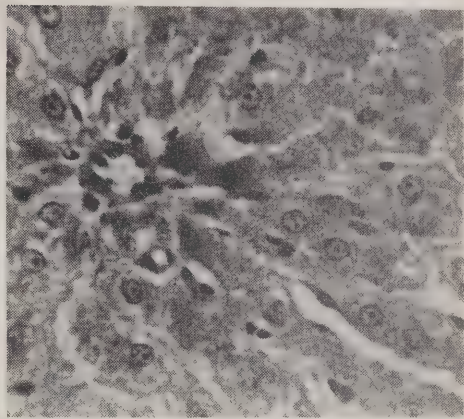


FIGURE 6 Section of liver fixed in 10 per cent formalin for 3 months and stained by the P.A.S. reaction. Mag 250X.

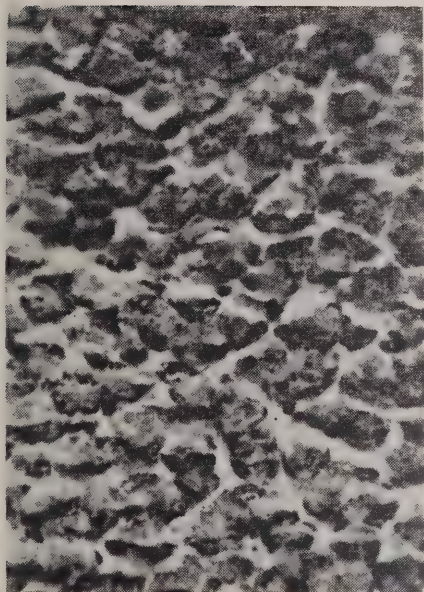


FIGURE 7 The periphery of a section of liver fixed in acetic alcohol formalin for two weeks and stained by the P.A.S. reaction. Mag 250X.

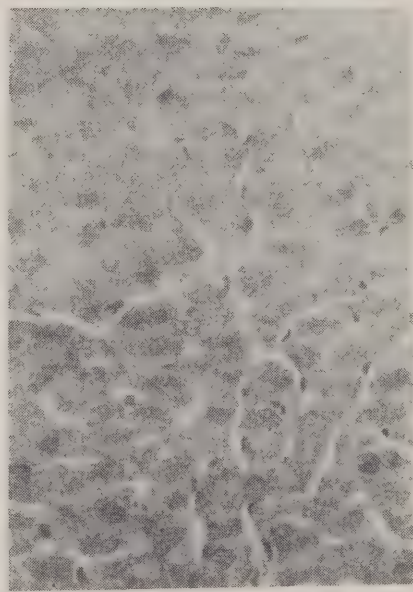


FIGURE 8 The periphery of a section of liver fixed in alcohol formalin for 24 hours and stained by the Best carmine method. Mag 250X.

tissues are fixed in Bouin's fixative over a similar period of time (Figures 3, 4). Aqueous based fixatives cannot be relied upon after 24 hours to 48 hours, to demonstrate the maximum amount of glycogen in tissues (Figures 5, 6).

It was found that acetic alcohol formalin fixed tissues gave the most marked polarization (Figure 7), whilst sections taken from specimens fixed in aqueous based fixatives showed considerably less polarization, and in some cases none at all.

Alcohol based fixatives give a coarser and larger granule of glycogen which stains with more vividness, and is easier to recognize following the P.A.S. reaction than the Best carmine.

An unusual distribution of glycogen was observed with the two stains that were used. With the P.A.S. reaction, some sections showed a very marked heavy peripheral accumulation of glycogen within the cells, whilst with the Best carmine method some sections showed a glycogen free peripheral zone (Figure 8). They were consistently reproduced but no suitable explanation can be offered for these observations.

BONE RESORPTION IN A CELL-FREE SYSTEM IN VIVO

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Both the reference material and the implants were subjected to a number of histochemical procedures. Observation of the implants suggested that the components of bone were being mobilized with and without the immediate presence of multinucleated cells. Mobilization appear-

ed by one week and was well advanced by one month. None of the implants was completely removed by 20 weeks, although it appeared that very little was remaining in many instances. The results of this study suggest that it is not necessary for osteoclasts to contact the surface of devitalized cell-free bone for resorption to occur.

A method of autogenous bone implantation, utilizing Millipore* filter diffusion chambers, has been developed to determine whether the immediate presence of osteoclasts, or other cells, is necessary for bone resorption to occur. A large portion of the right scapula was removed from young rats of the Holtzman† albino strain, devitalized by a freezing and thawing procedure to kill all associated cells, and divided into three equal parts: (1) one to be histologically prepared for use as a reference control; (2) one to be implanted into the subcutaneous tissue of the left side of the animal's back for use as an implant control; and (3) one to be sealed within a diffusion chamber to be placed in a similar area in the right side for use as an experimental implant. The latter implant represented a piece of cell-free bone within a capsule, with pores, which allowed tissue fluid to enter, but not cells. Thirty-two animals were divided into eight equal groups, and killed at 1, 2, 3, 4, 8, 12, 16, and 20 weeks.

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*Obtained from Millipore Filter Corporation, Bedford, Mass.

†Obtained from Holtzman Company, Madison, Wisconsin.

CASE REPORT

Pathological Fracture of the Mandible Associated with Peripheral Giant Cell Reparative Granuloma

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The peripheral giant cell reparative granuloma has evoked a great deal of confusion among dental and medical investigators; even at the present time there is no universal agreement on the true nature of this lesion. For this reason, the lesion has been described for many years under a great variety of names. The early belief was that the peripheral giant cell reparative granuloma was a true neoplasm, although the majority of modern investigators support the view that it is an unusual proliferative response of the tissues to injury.

Recently, some investigators have placed considerable importance on the role of trauma as an important aetiological factor in these lesions. The trauma is caused chiefly by tooth extraction, although other significant factors may be denture irritation or simply chronic infection.

The significance of trauma caused by tooth extraction, as a possible aetiological factor of peripheral giant cell reparative granuloma may be well emphasized by the following case report.

CASE REPORT

History and Examination. — A 19-year-old white female was first seen in the outpatient

department (Oral Surgery) of the Doctors' Hospital on April 23, 1961. She was referred by her dentist because of an unusual occlusal pattern on the left side of the mandible. This young woman had been in good health until approximately three months previously when she felt a peculiar pain in the lower left cuspid area. One year earlier the lower left cuspid tooth had been removed to make room in a crowded arch. Since that time the patient had noticed that the adjacent teeth were drifting into the space. There was a past history of measles and chickenpox but no other events of any significance.

On physical examination she appeared to be a healthy, well developed female with some distress arising from the abnormality in her lower jaw. There were no visible or palpable lesions or masses in the head and neck. The cardiovascular system was normal with normal heart sounds, a pulse rate of 90 per minute and blood pressure of 120/70 mm. Hg. The chest was clear to percussion and auscultation. The abdomen was soft but the liver was not palpable. Examination of the gastro-intestinal, genito-urinary and nervous systems revealed nothing significant.

On dental examination the lips and tongue were found to be normal. A mild gingivitis was evident. The adjacent teeth were tipped towards the lower left cuspid area on each side of the space on the left side of the lower jaw. There was some expansion of the mandible buccally. There was movement of the mandible as one would find in a fracture, with associated crepitus. Radiographs revealed a large area of bone destruction extending from the lower right cuspid to the lower left first molar tooth. There was a complete fracture of the mandible clearly evident at this site.

On April 23, 1961 the patient was admitted for excision biopsy of the mass and repair of the pathological fracture.

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Preoperative laboratory findings were as follows: haemoglobin 12.8 Gm. per cent; white blood corpuscles 7,400 per cubic millimetre; differential blood count—neutrophils 45 per cent, eosinophiles 20 per cent, basophiles 1 per cent, lymphocytes 29 per cent, and monocytes 5 per cent. A blood smear was normal except for the presence of unusually large platelets. Urinalysis findings revealed no albumen or sugar. The specific gravity was 1.027.

Surgical Procedure. — On the morning of April 24, 1961 the patient's blood was typed and cross-matched for 1,000 cc. of blood. She was Rh-positive, type O. Following premedication with oral penicillin, 500,000 I.U. t.i.d. and sodium pentobarbital, gr. 1½ h.s. on the preceding night, the patient received atropine, gr. 1/100 s.c. and meperidine hydrochloride, 50 mg. I.M. one hour preoperatively.

At 9.00 A.M. on the morning of April 24 the patient was brought to the operating room. Anaesthesia was induced with sodium thiopental and maintained with nitrous oxide, oxygen and trichlorethylene. Sterile drapes were applied and the surgical site prepared with cetyltrimethylammonium bromide detergent (*Cetavlon*). Initially, a Risdon Arch wire was attached to the maxilla and the throat was then packed with vaseline gauze. An incision was made in the gingiva from the lower right cuspid region to the lower left third molar region. A large flap of muco-periosteum was elevated from the alveolar process on the buccal and labial aspects of the left side of the mandible exposing a large tumour mass which contained loose lower right lateral and central incisors, left central and lateral incisors and left cuspid and first bicuspid teeth. This was loosened from the alveolar process and these teeth were removed along with the tumour in one mass. The tumour had a thick fibrous lining and contained cheesy, yellow pus. The mandible was fractured as previous radiographs had shown in the lower left cuspid region, but there appeared to be a good bony floor to the mandible extending up to form the lower quarter lingual and labial plates of bone. It was felt, if the mandible could be firmly held in position with intermaxillary ligation, that the fracture would heal without the necessity of a bone graft. Therefore, after the wound was packed with an absorbable gelatin dressing (*Gelfoam*) and closed with interrupted, triple 0 black silk sutures, wire loops were attached to the mandibular left molar teeth and right bicuspid and molar teeth, and then the mandible was ligated to the maxillary Risdon Arch using 26 gauge wire. Haemostasis was adequate and the patient was returned to the recovery room, in good condition. The following postoperative orders were given: sips of clear fluid to full liquid diet

with supplements; running I.V. administration of alternating 5 per cent dextrose-in-saline and dextrose-in-water, 1,000 cc. a.a. per 8 hour shift until the patient was able to take fluids well by mouth; intake-output analysis; slow release penicillin, 800,000 I.U. t.i.d.; meperidine hydrochloride, 75 mg. I.M. q.4.h. p.r.n. to relieve pain; sodium pentobarbital, gr. 1½ q.h.s. p.r.n.; and an ice pack applied to the face, 20 minutes on and 20 minutes off, alternately for 6 hours.

Microscopic examination of the material removed from the patient confirmed the diagnosis of reparative granuloma of the jaw. The submitted specimen consisted basically of soft tissues with many areas showing cellular spindle-shaped constituents occupying most of the tissue. These spindle-shaped nuclei were uniform in size and staining characteristics and displayed extremely rare mitotic figures. They were associated in a number of instances with collagen. In other areas there were focal infiltrations by lymphocytes and occasional collections of foamy macrophages. Elsewhere there were small giant-cell aggregates associated with old blood pigment, or recent haemorrhage in a number of instances. In addition, in one area there was residual stratified squamous epithelium present. The cellularity of this lesion was somewhat unusual but it was regarded as "reparative granuloma", with areas showing the usual giant cells. No evidence of malignancy was seen. Very few bony trabeculae were found, none of them being pathological.

Postoperative Course.—On April 26, 1961 the patient was discharged in apparently satisfactory condition. She was seen again on May 10. At this time she was feeling well, the wound appeared to be healing nicely and the intermaxillary wires were tightened. On June 7, periapical radiographs were taken. They revealed good healing and the intermaxillary wires were removed at this time.

SUMMARY

A case of pathological fracture of the mandible associated with peripheral giant cell reparative granuloma has been reported. The mandibular fracture was reduced and the jaws were immobilized in good functional occlusion. The tumour was treated by surgical excision with care being taken to remove the entire base of the lesion; if only superficial excision had been performed, prompt recurrence might have taken place.

45 Brunswick Avenue

EDITORIALS

Financing Health Care: Two Points of View

As the hearings of the Royal Commission on Health Services unfold across the length and breadth of Canada, two diametrically opposed points of view with respect to financing of health care are becoming clearly defined.

As reported in the press, organized labour wants a compulsory, completely comprehensive government health insurance plan including medical, dental, nursing, chiropractic and pharmaceutical services. Salaried personnel would be employed and payment effected out of consolidated tax revenue without cost to the user by way of direct payment, premium or sales tax.

Administration would be vested in a government health department and funds would simply be redistributed or transferred from other government activities. Presumably this money would come from corporate, succession and income taxes, principally from sources other than adherents of the labour movement.

Organized labour takes the view that fee-for-service is administratively cumbersome and provides the wrong incentives. It has absolutely no use for the commercial insurance carrier who is held to be in business for profit with minor concern for quality of care. Co-insurance is regarded as a device used by the commercial carrier to protect his profits and one which discriminates against those who need help most.

The two leading health professions on the other hand advocate the principle of voluntary prepaid health care insurance, with government help for those who cannot pay their own premiums.

Physicians and dentists contend that only a fee-for-service system can maintain the practitioner-patient relationship without third-party interference or lay control of professional practice.

Collective bargaining and the right to take strike action effectively protect the interests of salaried employees in most sectors of the economy. These principles, however, are reduced to a complete mockery when applied on behalf of workers who because of higher motives can never cease giving service. Physicians and dentists therefore reject conscription into salaried employment which puts them in a defenceless position.

These viewpoints form the background to a symposium scheduled for the annual meeting of the Canadian Dental Association at Vancouver in June. At that time, Dr. Malcolm G. Taylor, principal of the University of Alberta at Calgary and one of this country's foremost authorities on political economy, and Mr. A. Andras, director of Legislation of the Canadian Labour Congress, will present viewpoints on socio-economic trends in health services. We commend the subject to the attention of every dentist.

BUREAUX, COMMITTEES AND COUNCILS

Comments on the Survey of Dentistry in the United States:

2. Dental Practice

Dental Services Committee

"The key man in any effort to extend dental care to all the people will always be the dental practitioner. Without his willing support, the endeavours of dental educators, researchers and public health officials will be of no avail."¹

This opening paragraph in the section on "Dental Practice" in the *Summary Report of the Commission on the Survey of Dentistry in the United States* focuses attention on what every dentally trained individual knows to be the case but perhaps does not always completely translate into the most effective application especially in the rapidly changing twentieth century society. Social changes come about with such rapidity that the average individual almost gasps with amazement when reviewing what the last half century has unfolded. The conscientious professionally trained man cannot help but reflect at times on where he stands and where his profession stands in relation to such change.

It was a farsighted move on the part of the dental profession when, through the American Council on Education, an unbiased Commission was set up to take a look at the strengths and the weaknesses of its own organization in order to re-orient, if necessary, the efforts which may be made for future planning and development. This broad study has now been reported and though the findings may not always be in tune with individual likes and dislikes, it must be kept in mind that every effort was made to reduce the possibility of professional prejudice and yet be professionally sound in the appraisal of dentistry.

Though the number of dentists in the United States far exceeds that of Canada, and though there too the ratio of dentists to population may be more favourable, the situ-

ations in which the profession finds itself in one land are not too unlike those to be found in the other. Whatever advantages or privileges we may have today have been provided for us by the wisdom and judgement of our predecessors; whatever the pattern of the future may be, is ours to determine.

Therefore, it should be of interest to us in Canada to review the *Report of the Survey of Dentistry* for out of it must come suggestions which, though they may differ in degree, must surely be related in nature.

Early observations in that part of the Report dealing with dental practice point out the elements of change:

"Twenty-five or thirty years ago dental practice was limited to relieving pain and treating lesions of the teeth, the gums, and other tissues of the mouth. Today it is concerned with the comprehensive management of oral, facial and speech defects and with the oral structures and tissues as they relate to the total health of the individual."²

and further:

"Scientific and technological advances have improved the quality of dental practice, as well as the kinds and amount of service the dentist can render. . ."³

then referring to the dentist himself:

"As a highly educated professional man dedicated to a health service, he should also participate in activities that will contribute to the health and welfare of his community."⁴

Briefly then, this is the professional image of the dentist of today. This is where he now

starts on the program for tomorrow and this quite logically presents the dentist in his rightful role.

"Dentistry, therefore, challenges the integrity, intelligence, and skill of those who choose it as a profession, and because it is an essential health service, it offers those who enter it the respect and appreciation of society."⁵

Every profession has its recognized standards of performance and every profession will develop and progress according to the quality of the standards it has set for itself and the sincerity with which it attempts to meet such ends. It is therefore a very important matter that whenever one is dealing with the public in a professional way a mutual understanding regarding the full program of treatment should exist before any treatment is undertaken. This factor, which was important in the eyes of the Commission, is worthy of more than casual concern, for by the abuse of this principle misunderstandings occur and the public image of dentistry is thereby adversely affected. This point is important to the practising dentist at a time when rapid and dramatic changes are occurring in the socio-economic structure of the period.

PREVENTION IN DENTAL PRACTICE

Dental health of the public and of the nation is the chief concern of the dental profession. In the light of present knowledge and information, the two major dental ailments, dental caries and periodontal disease, are perhaps only partially understood, for research has not yet developed wide scale workable measures for their complete control. It must be recognized, however, that again during the last twenty-five or thirty years research has made available much knowledge and information that does permit reduction in the rate of inception of dental diseases. That this valuable preventive measure is slow to be accepted by the dentist in general practice—even though its worth has been demonstrated time and again—is shown in a survey reported in the Commission's Report which points out that of some 708 dentists in a little over 300 localities and distributed according to location, age and income, only 20 per cent conducted highly preventive practices. Of the remainder 29 per cent were moderately preventive, 25 per cent somewhat preventive, and 26 per cent negligibly preventive practices. The preventive measures referred to were only the more common ones long since accepted such as:

1. Routine cleaning and polishing of teeth.
2. Recommendation and administration (when permitted) of topical fluoride treatments.
3. Utilization of X-ray in almost all examinations.
4. Periodic recall of all patients.
5. Laboratory tests to determine caries activity.⁶

A very interesting observation relating to preventive measures in general practice is the fact that, "The more preventive the practice, the higher the net income". This fact is noticeably significant in that the highly preventive practices reflected the greatest incomes while the decreasing preventive interests followed a pattern of declining income to the lowest or negligibly preventive type of practice.

Dentists have always agreed that the responsibility for dental health education should rest with the dental profession and the survey reveals that dentists still believe this should be so. But thus far, in whatever preventive activities are undertaken there is a tendency for dentists to participate in preventive activities in their own offices rather than take action in similar activities in their own communities. It is a very natural conclusion then, when the Commission recommends that:

"All dentists participate vigorously in community public health projects."⁷

There is no doubt that the reparative skills have been in vogue much longer than the preventive skills and many people are not familiar with what the dentist can do to reduce the amount of dental disease. In addition there is a tendency when taking care of patients to perform those operations which technically provide the greatest challenge. Only when the public is educated to appreciate fully the total service dentistry has to offer rather than the artificial products it produces, will the old idea of craftsmanship be replaced by appreciation of the significance of good dental care to total health. It is obvious that to be most effective any preventive program must begin in early childhood and be maintained throughout the adult years.

Many practitioners who have recognized the significance of the preventive aspects of dentistry are strong supporters of auxiliary personnel who can be used to such a good advantage. Already much of the work ordinarily performed by a dental hygienist, including that of patient education, would cover much that would be performed in a well operating preventive practice. As public understanding of prevention increases the service of the hygienist or auxiliary could

conceivably be extended to provide a more complete service to more and more people. That:

"Dentists recognize increasingly the pre-eminent importance of preventive dentistry by utilizing all available preventive measures in their practices and by educating their patients in the value of prevention."⁸

is a timely recommendation when the theme of nearly all health organizations is one of prevention.

ATTITUDE OF THE DENTIST TOWARD HIS PROFESSION

The Commission has wisely pointed out the great preventive contribution that may be made to dental health by the practising dentist and, whether in United States or in Canada, the fact remains that prevention is one of our finest products. Dental public health teams have set the stage and dental practice must follow in the act.

In reviewing the attitudes of dentists toward their own profession the Commission found that in the main dentists are quite well satisfied with their profession. The dentist, being self-employed and completely in charge of his own affairs and with a considerable initial investment in education and in establishing himself in practice, tends to become readily stabilized and does not drift from one line of effort to another as may be found in business and industry. This places him in a preferred position for service to the community.

The Bureau of Economic Research and Statistics of the American Dental Association estimates that about 85 per cent of dentists practise solo. This permits individual expression and freedom of action and, in the minds of many, allows a better patient-dentist relationship. One of the problems in dentistry, however, is the constantly rising cost of operation. Efforts are being made to study ways and means of bringing more efficiency and economy into dental practice. Because of this factor greater interest is being shown in studies that relate to group practice. (The Dental Services Committee of the Canadian Dental Association has a sub-committee making such a study). It must be kept in mind, however, that from the observations made thus far the public attitude appears to emphasize the importance of solo practice.

SPECIALIZATION

The development of dental specialties in the United States has always occupied an active interest in the affairs of the profes-

sion. There are no less than seven recognized specialty groups—orthodontics, oral surgery, periodontics, prosthodontics, paedodontics, oral pathology and public health dentistry. At least six other groups have indicated their intention to request recognition as specialties, and it is not surprising to find there are many who fear "that if this trend continues dentistry might become so highly segmented that persons seeking general care would have difficulty in finding a practitioner to serve them."⁹

In Canada three specialties are recognized by the Canadian Dental Association—oral surgery, orthodontics, and periodontics.* At the present time there is not too much activity in any effort to add to this number and until a better definition of a dental specialty in a health service is outlined it is perhaps wise, for the time being at least, to leave this matter as it stands! In the United States through the American Dental Association there is concern with the problems of specialization; there is a concern about over-specialization in dentistry and the protection of both the public and the profession.

The Commission referred particularly to two areas of special practice—periodontics and orthodontics. For the general practitioner there is one observation which is particularly important because it emphasizes the role which the dentist in general practice can play in one of the most troublesome of dental diseases:

"More of the population suffer from untreated periodontal diseases and malocclusion than from any other abnormal oral condition except caries. People over forty lose more teeth from periodontal diseases than from caries; yet these diseases progress slowly and their symptoms are evident long before the tissues suffer serious injury. For this reason, the general practitioner can accomplish more for the population as a whole than the specialist to whom cases are referred usually only after the tissues have undergone much damage. The prevention and control of periodontal disease must depend upon the alertness and skill of the general practitioner and the awareness of the public of the need for periodic examination and treatment. The problem cannot be solved by training more specialists to intervene after the tissues have suffered severe damage."¹⁰

The problem in malocclusion and orthodontic irregularities is no less acute. It is estimated that there are over sixty million persons under the age of eighteen in the United States. It is estimated also that there are perhaps not more than twenty-five hundred orthodontists. If the estimated 2,500 orthodontists averaged even a great a number

as 150 cases per year (which must be considered very high), they could not possibly treat more than 375,000 patients. The annual birth rate is somewhere at the level of four million, and between one and two million of these new-born will require some orthodontic treatment. This need is almost bewildering, and all things considered, it is evident that only a small portion of these children would ever be in a position to secure the benefits of specialists. More emphasis and education should be placed on interceptive orthodontics both with dental students and dentists and realizing the vastness of the task ahead the Commission wisely suggests much more research is needed in order that more orthodontic service, preventive and otherwise, may be made available to more people. To this end the Commission recommends that:

"The dental profession and the dental schools take appropriate action to narrow the gap between the need for prevention and treatment of malocclusion and the services available to meet the need."¹¹

To some extent statistics are lacking to make a comparison of malocclusion and periodontal disease in Canada but these afflictions are common to North American people, as well as in many other civilized countries, and it is only reasonable to assume that a somewhat similar problem exists to challenge the efforts of our own profession at home.

FEEs AND INCOMES

Fees, fee schedules and the incomes of dentists are always a complex matter to evaluate or discuss simply because there are so many factors involved. The unbiased basic general principles for the establishment of a proper fee schedule have never been set up as a uniformly accepted standard. The Commission reports that:

"The ultimate determination of a fair fee is complex and subject to wide variations. That is why many dentists follow the simple procedure of charging fees that are common in the community. Such habits tend to perpetuate a basis for determining fees that is not consistent with modern practice, particularly with regard to placing a proper value on preventive services. In many areas the public have been educated to pay for materials rather than services."¹²

A good example of this is the relative fees for a replacement or restorative service as compared with a thorough dental prophylaxis which is preventive. It is a regrettable situation that preventive procedures are

widely downgraded in the dental fee structure.

One noticeable factor relating to incomes of dentists is the geographic difference in incomes. The Canadian surveys have always noted quite a spread geographically. A similar situation exists in the United States. The patterns of practice, such as working with or without assistants, etc., revealed a very similar picture to that reported in our last two Canadian surveys. All of this suggests the necessity for a careful look at the methods of practice presently employed by the dentist in general practice.

A great deal of statistical material relating to fees, incomes, age groups of dentists, size of localities and many other factors is reported in the American survey but in the main, where comparisons can be made, the findings bear out a very similar pattern to the findings reported in our own Canadian Dental Association Surveys of Dental Practice. One very apparent observation is the fact that where demand for service is great enough, the judicious use of auxiliaries and assistants can be a very great aid to the dentist, not only from the point of view of more effectively rendering service to a larger number of people, but can be economically advantageous to himself as well.

Insurance and prepayment plans were developed to help ease the burden of financing payment for health care. Many considered too, that this would strengthen the patient-practitioner relationship which has been so important in health programs of the United States. The majority of these plans seem to be quite satisfactory, some mildly so and a few have been troublesome.

The point must be made, however, that the establishment of plans of this nature is a development of the last decade or so which appears to be gaining in popularity and could conceivably bring about an altogether new pattern of dental practice. Whether this development is desirable or not depends upon how well we understand how these plans work, the support we are ready to give in establishing such plans and the willingness of the profession in setting up its own machinery to administer these plans. Already the Canadian Dental Association has given much thought to prepayment and post-payment mechanisms of different types and has outlined basic principles which may set a pattern for interested groups.

HOSPITAL DENTAL SERVICES

If the dental profession is to carry out its purposeful role of providing dental care to the people of the nation, it would appear that dental services cannot continue to be centered solely on the dental office. There

is a strong conviction that to participate in total health care, dentists must participate by serving on staffs of hospitals with a status consistent with that of practitioners of the other health professions. Not only is this a desirable objective but it is feasible and has been employed in some situations. The Commission has been very emphatic in its recommendations, some of which stress that:

"In the interest of total care of patients, both hospitals and dental societies work for the establishment of more hospital dental departments and encourage dentists to participate in hospital service.

"Hospital dental departments be delegated authority and administrative responsibilities similar to the authority and administrative responsibilities of other hospital services."¹³

"A larger number of carefully supervised dental internships be developed in hospitals, schools, and clinics, and dental students be encouraged to enter internships following their graduation."¹⁴

"Dental schools develop courses through which practising dentists interested in appointments to hospital staffs may receive basic instruction in hospital procedures."¹⁵

CONTINUING EDUCATION

The question of continuing education is always a matter of considerable concern in all health services. The gap between research and clinical practice indicates that if the professional man is to maintain a competent service, methods should be developed which will make it readily possible for him to keep in tune with the scientific and other professional development of the time. This responsibility probably falls within the realm of organized dentistry and the dental educators. Revolutionary changes in biological sciences and technology are almost routine and provision must be made to provide the stimulus, the plans and the machinery whereby professional excellence through well designed programs of continuing education will become the pattern from graduation on.

Much stress has been placed on the preventive approach to better dental health. It is recognized, however, that this alone will not solve the manpower problem. Three ways have been suggested to increase the output of dental practice: group practice, multi-chair practice and the wider area of auxiliary personnel — dental assistants, hygienists and laboratory technicians—in either solo or multi-chair practice situations. Of course there are many positive and perhaps as many negative points of view relating to these suggestions but the fact remains that

these patterns of practice are established, the majority have been successful professionally and as a health service, and there is every evidence that this trend will continue to develop. Expanding the duties of dental auxiliary personnel at a time when there exists such a shortage in the professional ranks must necessarily be considered as an area to be explored and it is only fitting that the Commission should recommend that the dental profession conduct studies designed to develop and expand their duties. There are many legal, numerical, and educational problems related to the effective use of dental auxiliaries of all sorts. Dentists in the main are not trained in the use of dental auxiliaries to the best advantage simply because it does not usually form a part of a broadly established training program at either the undergraduate or graduate level. But while study is being directed to the duties of dental auxiliaries, it is only reasonable to expect that consideration would also be given to educational programs designed to help the student, the young graduate and the general practitioner in the efficient utilization of all dental auxiliary personnel.

It must be pointed out that the observations made in this brief commentary are in no way a digest or a report on the section of the Commission's study dealing with dental practice. It is only intended to draw attention to the fact that there are some areas which in the eyes of the Commission needed to be drawn into closer focus in order that the profession may proceed in a harmonious pattern in moving toward its goal in health service.

*It is noted that the Canadian Dental Association has four specialty sections — oral surgery, orthodontics, paedodontics (dentistry for children) and periodontics.

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DENTISTRY IN THE NEWS

The Association

UNIVERSITY PRINCIPAL, LABOUR CONGRESS OFFICIAL TO ADDRESS C.D.A. ANNUAL MEETING

Dr. Malcolm G. Taylor, principal of the University of Alberta at Calgary, and Mr. A. Andras, director of Legislation of the Canadian Labour Congress will be the essayists on the C.D.A. feature panel presentation, "Socio-Economic Trends in Health Services" at the annual meeting at Vancouver in June.

Dr. Taylor will discuss "The Politicalization of Health Care." He is one of the foremost authorities on health insurance in North America. Formerly associate professor of Political Science at the University of Toronto, Dr. Taylor is the author of numerous articles and text books including *Administration of Health Insurance in Canada* and *Financial Aspects of Health Insurance*.

Mr. Andras has been director of the Department of Legislation and Government Employees of the Canadian Labour Congress since 1957. Long active in labour organizations, Mr. Andras has been an editor and has contributed to many labour and professional publications. He is active in the Canadian Welfare Council, the Group Health Associa-

tion of America and other organizations. Mr. Andras has selected for his subject the title, "Labour Looks at Health Care."

C.D.A. CONVENTION ART EXHIBIT

Any form of the arts and crafts such as paintings, drawings, etchings, photography, sculpture, wood carving, metal work, etc., is eligible for display in the Art Exhibit of the C.D.A. Convention at Vancouver and all dentists are warmly invited to participate. Further information and entry forms may be obtained from Dr. G. A. C. Walley, Art Display Committee, British Columbia Dental Association, 925 West Georgia Street, Vancouver, British Columbia.

Canada and the Provinces

ALBERTA

Edmonton and District Dental Society.—Table clinics presented by dental students at the University of Alberta, the use of closed circuit television as a teaching aid in the dental school, and a motion picture covering practical aspects of prosthodontic, operative and endodontic procedures as well as porcelain jacket crown preparation were featured at the meeting of the Edmonton and District Dental Society held on December 5, 1961.

J. C. Bartels of the University of Oregon Dental Schools addressed the Society on January 11, 1962. The subject of his afternoon address was "Full-Mouth Reconstruction." His evening address was devoted to a comparison of plastic and porcelain crowns.

BRITISH COLUMBIA

Brief for the Royal Commission on Health Services.—The British Columbia Dental Association's brief to the Royal Commission on Health Services has been completed and sent to Ottawa. It is a report of over forty pages prepared by a committee appointed by the Council of the B. C. College of Dental



Ashley & Crippen

Dr. M. G. Taylor



Mr. A. Andras

Surgeons. The committee is composed of G. A. Freeze, E. I. Slakov and A. E. Swanson, chairman.

Bursary Awarded.—The E.S.H. Winn Memorial Bursary in Dentistry has been awarded to C. J. Pereversoff. This bursary in the amount of \$300 annually has been established by three British Columbia dentists, R. M. D. Waddell, H. Guenther and D. G. Hall, in memory of Mr. E. S. H. Winn who was the former administrator of the B. C. Youth Foundation.

Vancouver and District Dental Society.—At the December 1961 meeting three new members were received, making a total of 18 new members for the current year and placing the membership at almost 400.

A report on the society's dental budget plan showed that during one year of operation ninety-one dentists had processed 446 accounts entailing almost \$57,000. These accounts ranged from \$50 to over \$1,100 for an average amount of \$127. There have been only three delinquent accounts amounting to \$418. Expenses for administration and retiring portions of the original cost of the plan were under \$200.

G. M. Jinks reported that a British Columbia branch of the Canadian Society of Dentistry for Children was being formed. Clinicians will be brought to the province and officers appointed for British Columbia.

The essayist, I. I. Beechen, a paedodontist from Oakland, California, addressed the society during the afternoon on "The Problem of Anterior Crossbite" and in the evening on "Basic Principles for the Care of Children in Your Practice". Dr. Beechen stressed the importance of taking a history to get the patient's interpretation of the problem. To be complete the examination should be clinical, psychological, and should always include radiographs. Immediate appointments should be made for emergencies such as traumatic injuries, toothache or swelling. It is advisable to have new children's first appointments in the morning when they are at their best. It was emphasized that the early detection of possible malocclusion is important at four years of age.

Dr. Beechen also lectured to the Vancouver Paedodontic Study Club at the Vancouver Children's Hospital.

At the January 1962 meeting J. C. Bartels of Portland, Oregon gave afternoon and evening addresses on "Aesthetic Restorations" and "Destructive Factors to the Masticating Organ and Restorative Treatment."

Fraser Valley Dental Society.—Recent speakers at society meetings were R. I. Yorsh of

Vancouver whose subject was hypnosis and G. M. Jinks, also of Vancouver, whose topic was paedodontics with particular emphasis on the use of fluorides for caries control. K. W. McCann of Whalley has been chosen representative on the B.C.D.A. executive.

Victoria Dental Society.—In November 1961 the society met at Holyrood House when S. Miles presented motion pictures on anaesthesia cardiac resuscitation. Guests included the anaesthesiologists from the four hospitals in the Victoria area whose comments on the motion pictures were much appreciated.

MANITOBA

Dental Internship By-Law Enacted.—A recently enacted by-law under the Manitoba Dental Association Act regulates the appointment of dental interns and the period of dental internship in Manitoba.

The new by-law provides that any dental graduate of an approved school, who is at least twenty-one years of age and who desires to become a dental intern in a recognized hospital in the province of Manitoba, shall put himself under the protection of the Manitoba Dental Association Act by signing an indenture with the member of the Manitoba Dental Association who is the chief of dentistry at such hospital, in the form approved by the board of the Manitoba Dental Association, for a period of not more than twelve months, which period shall not be extended or renewed without the consent of the board.

Manitoba Annual Mid-Winter Dental Clinic.—One hundred and sixty-nine dentists attended the Manitoba Annual Mid-Winter Dental Clinic in Winnipeg, January 15-18, 1962.

Featured essayists included J. C. Muhler of the Department of Biochemistry, Indiana University Medical School, and Colonel R. B. Shira, chief of Oral Surgery, Walter Reed Army General Hospital, Washington, D.C. Dr. Muhler reviewed the practical application of preventive dentistry, with special emphasis on topical application of stannous fluoride, domestic use of stannous fluoride dentifrices and water fluoridation. Colonel Shira described common problems in oral surgery, changing concepts in the practice of oral surgery, indications and techniques for biopsy procedures, and bleeding problems of interest to the dentist.

An extensive display by technical exhibitors and twenty four table clinics were highlights of the convention.

Fifteen new members of the Manitoba Dental Association were presented at the annual business meeting. In his presidential report, W. I. Jackson, association president,

gave special recognition to T. J. Cooke and the members of various committees responsible for the production of the Manitoba Dental Association's brief to the Royal Commission on Health Services.

Reports were presented by the following committee chairmen: H. A. Allen, Public Relations; T. Goldberg, University Selection; J. Passalis, Manitoba Hospital Services; T. J. Cooke, National Dental Examining Board of Canada; W. W. Shorthill, Dental Assistants' Training Course and Group Insurance; A. A. Rabinovitch, Mediation; R. E. Wallace, Workmen's Compensation Board; M. G. Shapira, Dental Public Health; P. M. Jackin, Dental Services; W. J. Riley, Civil Defence and Board of Governors of the Canadian Dental Association; W. G. Campbell, Manitoba Dental Service (Medicare); J. O. Brown, Fluoridation; and J. E. Abra, Scholarships.



F. W. Jones, president,
Manitoba Dental Association.

Honorary life memberships were conferred on Oswald Brewer of Winnipeg, R. G. Hurton of Glenboro, and E. A. White of Winnipeg, associate provincial editor of the *Journal of the Canadian Dental Association*.

New appointments to the board of the Manitoba Dental Association are: F. W. Jones, president; H. A. Allen, vice-president; and W. G. Campbell, registrar-secretary-treasurer. F. W. Parrott has been replaced by W. R. Harwood of Brandon following six years of service on the board.

NEW BRUNSWICK

New Brunswick Dental Society.—The annual meeting of the New Brunswick Dental Society was held under the chairmanship of B. A. Cyr, president, at the Lord Beaverbrook Hotel, Fredericton, October 14, 1961. All areas of the province were represented with more than a third of the membership in attendance.

Items under discussion included emergency health services, amendments to by-laws, the

Royal Commission on Health Services, welfare problems, hospital dental services, recruitment to the profession, and other pertinent subjects.

At the noon luncheon, F. L. Miller of Fredericton, gave a most interesting humorous and appropriate address, especially directed to the newer and younger practitioners present.

The Fredericton Dental Society arranged an enjoyable social evening at the Marina and the Fredericton dentists' wives arranged a program for the ladies.

The following officers were elected for the ensuing year: A. J. Coughlan of Saint John, honorary president; H. F. Bonnel of Saint John, president; B. A. Cyr of Edmundston, immediate past-president; R. H. Dolan of Fredericton, vice-president; and R. F. Sansom of Saint John, registrar-secretary-treasurer.

Representatives to other organizations are: J. F. Edgcombe of Saint John and G. G. Orser of Woodstock, to the Board of Governors of the Canadian Dental Association; R. B. DeWare of Moncton and A. Steuermann of Saint John to the National Dental Examining Board of Canada; L. G. Zed of Saint John to the Canadian Cancer Society; and H. F. Bonnell of Saint John, referee, Workmen's Compensation Board.

The following committee chairmen were appointed: A. D. Bona of Saint John, Legal Committee and Hospital Services Committee; R. B. DeWare of Moncton, Dental Services Committee; D. C. Steeves of Moncton, By-Laws and Discipline Committee; G. L. Ramsay of Saint John, Welfare Committee; J. G. Blackmer of Saint John, Public Relations Committee; D. L. Britt of Saint John, Dental Public Health Committee; George Cormier of Moncton, Dental Examining Board of New Brunswick; and D. C. Steeves of Moncton, Recruitment Committee.

J. E. E. Alain of Bathurst, J. G. Blackmer of Saint John, K. A. Hetherington of Fredericton, G. Daigle of Edmundston, and B. C. MacDairmid of Moncton, as well as the chairmen of the Legal, By-Laws and Dental Services Committees, were appointed to the Council of the New Brunswick Dental Society.

In a brief submitted to the Royal Commission on Health Services at the beginning of November, 1961, the society recommended fluoridation of drinking water, public education through the mass media, increased dental training facilities at Canadian universities and subsidization for dental students, subsidized dental clinics in larger hospitals for in-patients and out-patients and increased support for dental research. The brief also recommended:



Michaud

Making a vigorous attack on his 100-candle birthday cake on January 15 is centenarian F. A. Godsoe of Hampton, New Brunswick. Members of the New Brunswick Dental Society present were, left to right, I. K. Farrer, H. W. Ramsay, J. R. Hutchinson, A. J. Coughlan, J. F. Edgecombe and MacDonald, S. K. Wetmore, G. L. H. F. Bonnell.

1. Top priority to dental care for children in any government or compulsory prepayment scheme.

2. Amendment of existing provincial legislation which prohibits the addition of chemicals to water supplies except for purification.

President William Miller and Secretary Don W. Gullett of the Canadian Dental Association addressed a dinner meeting of the New Brunswick Dental Society in Saint John, November 28, 1961. Honorary membership in the provincial society was conferred on T. E. Robidoux at this occasion.

Saint John Dental Society.—"Infections and Antibiotics" was the subject of an address to members of the Saint John Dental Society delivered by A. E. Hoffman, associate professor of Oral Surgery, Dalhousie University, at the January 1962 monthly meeting.

Upper Valley Society Elects.—The following officers were recently elected by the Upper Saint John River Valley Dental Society for the current year: J. A. Chouinard, president; D. Boudreau, vice-president; and E. St. Onge, secretary-treasurer.

New Brunswick Dental Technicians Association.—Properly qualified denturists should be permitted to engage in full denture practice, from impression to insertion and fitting, without in any way limiting the right of dentists to practise in the same field. This was recommended by the New Brunswick Dental Technicians Association in a brief submitted to the Royal Commission on Health Services early in November 1961. According to the *Moncton Transcript* and the *Saint John Telegraph-Journal*, many dental technicians are competent to do this work but are pre-

vented by the province's dental act from doing so. The technicians said they believed that the cost of dentures could be reduced by eliminating the need for two persons — the dentist and the dental technician — where the work could be performed by one.

NEWFOUNDLAND

Compulsory Fluoridation Suggested to Royal Commission.—The following editorial from the *Cape Breton Post* resulted from the Newfoundland Dental Society's brief to the Royal Commission on Health Services at public hearings in St. John's recently.

"The Newfoundland Dental Society was in a grim mood when it presented a brief to the Royal Commission on Health Services. The brief demanded compulsory fluoridation of public water supplies in Newfoundland to combat 'rampant' tooth decay in the island.

"Newfoundland is suffering from a woeful lack of dentists. Compulsory fluoridation to reduce the incidence of tooth decay in children, is only one of the drastic measures the dental society advised, but it is of primary urgency. "The society also called for a well-organized, properly developed and efficiently administered master plan for dental care.

"It urged that scholarships be provided to induce young Newfoundlanders to enter the dental profession and that incentives be offered to get dentists to practise in rural areas.

"The lack of dental care in Newfoundland is too grave a matter for the luxury of an academic argument about fluoridation.

"When the tooth decay situation gets as serious as it is there the time has come for an intelligent authority to get busy and give a neglected people what is good for them. The like of this happened when vaccination against smallpox became compulsory; many people didn't want it; they believed that vaccination would be bad for them, but they got it just the same and their lives were saved, and smallpox epidemics ceased to be."

NOVA SCOTIA

Halifax County Dental Society.—G. W. Caldwell, president, presided at the regular monthly meeting of the Halifax County Dental Society at the Nova Scotian Hotel, January 18.

John Findlay, associate professor of Periodontics at Dalhousie University, addressed the meeting on the subject, "Early Recognition of Periodontal Disease." Stressing the relationship between early diagnosis and a favourable prognosis in arresting the disease, Dr. Findlay stated that ninety per cent of the population over the age of twenty-five suffer from some form of periodontal disease, which accounts for sixty-five per cent of tooth mortality beyond this age. The general practitioner can do much to reduce the incidence of this disease through proper oral diagnosis and through restoration to proper function of the teeth and associated structures, Dr. Findlay added.

Cape Breton Island Dental Society. — John Findlay, associate professor of Periodontics, Dalhousie University, addressed the January meeting of the society at the Isle Royale Hotel, Sydney. "The General Practitioner's Part in Early Diagnosis of Periodontal Disease" was the subject of his lecture. A special presentation was made to C. A. Sullivan. The meeting was followed by a reception at the home of Dr. and Mrs. L. G. Israel.

ONTARIO

Niagara Peninsula Dental Association.—The annual "Home Brew" night of the association was held at Fort Erie on December 8, 1961. W. J. Simpson of Niagara Falls presided at the meeting. T. Turner of Niagara Falls showed a motion picture of a visit to Africa made in 1958.

It is reported that K. M. Phillips of Welland is making good progress following a recent illness.

Academy of Dentistry, Toronto. — Leonard Monheim, professor and head of the Department of Anaesthesiology, University of Pittsburgh School of Dentistry, assistant professor in the Department of Surgery (Anaesthesia), University of Pittsburgh School of Medicine, and a senior staff member at the Presbyterian and Women's Hospital of the University of Pittsburgh, addressed the First Stated Meeting on January 25. Describing various emergencies which arise in the dental office, Dr. Monheim stressed the importance of a thorough case history which alerts the dentist to any predisposing conditions present in the patient. Dr. Monheim discussed the manage-

ment of these emergencies, using a motion picture to demonstrate mouth-to-mouth resuscitation, external heart massage, and the use of oxygen.

QUEBEC

Mount Royal Dental Society.—J. T. Coupland of Ottawa was the guest speaker at the second general meeting of the Mount Royal Dental Society held at the Mount Royal Hotel, Montreal, on October 17, 1961. Dr. Coupland, a leading Canadian oral surgeon, presented a series of case histories entitled "The Surgical Repositioning of Teeth", illustrating the management of irregular dentition. Stressing the importance of early recognition and purposeful action, the speaker warned that retention of deciduous tooth fragments can affect the position of permanent teeth causing displacement of one or more teeth. The use of stainless steel wire to guide impacted cuspids and mandibular first molars into position was illustrated. Also demonstrated was the surgical movement or tilting into position of teeth. As long as the integrity of the neuro-vascular supply is maintained, these teeth will recover, Dr. Coupland stated. Cases of successful tooth replantation were also shown.

"Practice and Professional Procedures" was the topic of a panel discussion held on December 12, 1961. G. Franklin, L. J. Rosen and S. Silver were the participants with P. J. Gitnick acting as moderator. Dr. Franklin discussed professional behaviour and practice, emphasizing the significance of social behaviour both in and out of the dental office. He stressed the importance of dealing with patients as people, not as "cases", and the ethics of the doctor-patient relationship.

Dr. Rosen discussed the dentist's responsibilities to his patients, his confreres, and the community. He stressed the importance of treating patients as people and the wisdom of providing time daily for emergencies. He demonstrated the advantages of praising previous treatment rendered by other colleagues and the necessity of avoiding criticism. The patient's responsibility to the dentist on a time and financial basis was also discussed.

Dr. Silver concluded by stating that "Doing one's best to the utmost of his capabilities is a measure of a man's success."

Montreal Alumni Chapter, Alpha Omega Fraternity.—I. Glickman, head of the Department of Periodontology at Tufts University Dental School, Boston, was the guest lecturer at the November 1961 meeting of the Alpha

Omega Fraternity. Stressing periodontics as a philosophy of general dental practice, Dr. Glickman stated that it is just as wrong to insert a restoration in a periodontally diseased tooth, as in a tooth with dental caries. Every patient should be viewed by the dental practitioner with a periodontal awareness; above all he should do nothing to cause pathological disturbance in the periodontium. He should learn to recognize pathological conditions early and know how to treat them. Dr. Glickman described the factors leading to periodontal breakdown and discussed methods of treatment.

Montreal Dental Club.—The first combined meeting of the dental societies of Montreal for the current season was held at the Queen Elizabeth Hotel when members of the Montreal Dental Club, the Mount Royal Dental Society and the Société Dentaire de Montréal met on November 27, 1961.

William Miller, president of the Canadian Dental Association, was a guest on this occasion. Dr. Miller described the problems facing the dental profession and the adjustments that must be made in deference to social and economic forces acting from outside the profession. He stressed the principle of group practice, wider use of dental auxiliary personnel, and further development of prepayment and postpayment plans as mechanisms for increasing the availability of dental care.

W. L. McCracken, professor of Prosthetics at the University of Alabama, addressed the meeting on "Partial Dentures" and "Occlusal Relationship and the Contrasting Requirements for Fixed Reconstruction". Dr. McCracken discussed denture design, differential diagnosis relating to fixed and removable prosthesis, the purpose and use of major and minor connectors, retentive and reciprocal arms, and occlusal rests. The conditions under which a partial denture is more desirable than a fixed bridge were described. Various methods of recording the interocclusal index were described and the speaker stressed that all occlusal disharmony must be eliminated before constructing a fixed or removable prosthesis. A functional rather than an arbitrary bite registration should be used. This is obtained by having the patient wear a wax bite rim for forty-eight hours, thereby producing a record of the opposing teeth in function. In order to obtain functional seating of the finished partial denture, the patient is allowed to wear the denture before a final adjustment of the occlusion is carried out.

Six dentists who have completed thirty-five years in dental practice were honoured at the annual Black Tie Dinner held at the Windsor Hotel on December 11, 1961. They are: A. W. Birbank, W. E. Charland, S. T. Goodnoh, R.

G. MacGregor, H. G. McNabb and D. S. Watson. H. T. Oliver, a past president of the Montreal Dental Club, showed a film of a recent visit to Japan and the Far East. Dr. Oliver was an official delegate of the College of Dental Surgeons of the Province of Quebec and of the Canadian Dental Association to the Third Asian Pacific Dental Congress held in Tokyo, Japan.



Nakash

F. O. Frederick,
president, Montreal
Dental Club.

The sixty-fourth annual meeting of the Montreal Dental Club was held at the Queen Elizabeth Hotel, January 22, 1962. Resolutions were passed on the death of J. S. Common, a long-time member of the club, and Denis Forest, former registrar of the College of Dental Surgeons of the Province of Quebec.

After the president, W. J. Johnston, had given his review of the past year, annual reports were presented by the club's officers. Among these was a report by J. Vincelli attesting to the success of the 36th Annual Fall Clinic.

Elected for the coming year were: W. J. Johnston, honorary president; F. O. Frederick, president; A. W. Oliver, president-elect; R. G. Jones, secretary; J. D. Fenwick, treasurer; and W. B. Zimakas, reporter.

Directors who remain to complete their term of office are: D. J. Munro, J. D. Stewart and G. M. Johnston. Named as directors for a period of two years were: H. C. MacNabb, Walter Kowal and L. A. Gill.

Quebec Orthodontists Meet. — The Montreal Society of Orthodontists plans expansion on a province-wide basis. Accordingly, its name was changed to The Association of Orthodontists of the Province of Quebec at a meeting held in the Berkeley Hotel, Montreal, January 30. President of the association is J. L. Bertrand. V. B. Griffiths and Charles Solomon were named vice-president and secretary respectively.

Gerald Franklin, G. P. Kelly and A. L. Scherzer participated on this occasion at a panel discussion on office procedure. Anita Mendel, immediate past president, acted as moderator.

International Items

UNITED STATES

Forthcoming Dental Meetings.—The following meetings of dental societies have been scheduled for the winter months of 1962:

The American Academy of Oral Pathology will meet at the University of Indiana School of Dentistry, Indianapolis, Indiana on April 5-7, 1962. Further information may be obtained from R. J. Gorlin, School of Dentistry, University of Minnesota, Minneapolis 14, Minnesota.

The American Academy of Dental Medicine will meet at the Lord Baltimore Hotel, Baltimore, Maryland, May 13-16, 1962. Further information may be obtained from P. Block, 36 N. Luzerne Avenue, Baltimore, Maryland.

Canadian Dental Schools

MCGILL UNIVERSITY

New Appointments.—R. W. Faith has been appointed assistant professor and chairman of the Department of Orthodontics. Dr. Faith is a graduate of McGill University and completed his graduate training in orthodontics at Tufts University, Boston.

O. P. Sykora has been appointed assistant professor of Prosthodontics. Dr. Sykora is a native of Czechoslovakia and a graduate of McGill University. He holds, as well, a doctorate of philosophy in Slavic languages from the Université de Montréal.

Dentistry Career Day.—A "Dentistry as a Career" day was recently held at the McGill University Dental Clinic of the Montreal General Hospital. Approximately fifty senior high school students attended. Greetings were extended by James McCutcheon, dean, and

brief formal presentations were made by senior staff members. Later, the students visited the clinical laboratory areas with senior dental students acting as guides. The success of this venture has established it as an annual event.

Staff Members Lecture to Various Groups.—Once again, a series of lectures on dentistry was delivered to first-year students of the Montreal General Hospital School of Nursing. This appears to be established as an integral part of the nursing school's program.

L. E. Francis, A. G. Racey and M. A. Rogers recently presented a seminar on "Oral Pathology and Medical-Dental Relations" to third-year medical students at McGill University.

L. E. Francis presented a paper on "Studies on Physiological Antihistamine" at the First Canadian Conference on Dental Research in Toronto, October 30-31, 1961.

E. R. Ambrose recently addressed the London and District Dental Society of London, Ontario, on "Newer Concepts in Silver Amalgam Restorations."

UNIVERSITY OF TORONTO

Plan Dental Auxiliary Training Study.—The council of the Faculty of Dentistry recently recommended that small committees be formed to plan an experimental program designed to broaden the scope of dental hygiene training and to study the problem of training dental students in the use of chair-side assistants. No action will be taken at this time with respect to the training of dental technicians.

UNIVERSITY OF ALBERTA

The training program for dental auxiliaries commenced in the fall term with a class of twenty students. They advanced to the clinical area early in 1962.

Postgraduate courses were recently conducted in Operative Dentistry; Oral Diagnosis, Pathology and Surgery; and Oral Radiology. Guest clinicians at these courses included M. Markley (Operative Dentistry); H. Samuels (Oral Diagnosis, Pathology and Surgery); and D. B. Scott and H. E. Dugan (Oral Radiology).

New Appointments.—The following were recently appointed to the teaching staff: B. M. Buchanan and A. V. Calhoun, Operative Department; C. E. Filipchuk, E. H. Stang and J. M. Venne, Crown and Bridge Department; R. L. Costigan, R. B. Hager, A. H. Lane and

J. E. Young, Prosthetic Department; B. L. Kuzyk and J. Mathieson, Department of Children's Dentistry; and Mrs. J. Sikora and Mrs. J. Woytuk, Department of Public Health and Preventive Dentistry.

Dr. Costigan is a graduate of the University of Toronto as is Mrs. Woytuk. Dr. Lane is a graduate of McGill University. Mrs. Sikora graduated from Northwestern University, Chicago. The remaining new staff members are graduates of the University of Alberta.



Lt.-Col. W. R. Cunningham, left, recently retired from the Royal Canadian Dental Corps. Lt.-Col. G. E. Windsor, centre, and Maj. R. J. Bryant, right, received promotions.

Royal Canadian Dental Corps

NEWS FROM HEADQUARTERS

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces attended a meeting of the editorial board of *Oral Health* in Toronto on January 24 and visited the R.C.D.C. School, Camp Borden on January 25 and 26 to inspect dental personnel and facilities.

Lt.-Col. D. H. Hillier of the Directorate Staff represented the Director General at a meeting of the Canadian Dental Association's Council on Public Health held in Toronto, January 24-25.

Major D. H. Protheroe of the Directorate Staff presented six lectures on the subject of Clinic Management to officers attending the clinical course at the R.C.D.C. School, February 1-2.

ANNUAL CORPS CONFERENCE HELD IN OTTAWA

Regular Force dental unit commanding officers from across Canada gathered in Ottawa with the Director General and his staff for a conference held December 4-6, 1961. The conference was under the direction of Brigadier K. M. Baird, Director General of Dental Services and chaired by Colonel G. B. Shillington, Deputy Director General of Dental Services. Papers were presented by officers of the Directorate and discussions held on subjects related to operation of the Corps.

Social activities included a mixed mess dinner held at the Air Force Headquarters Officers' Mess on December 5. In addition to those attending the conference, many Regular Force and Militia dental officers and their ladies from Ottawa and the surrounding area were in attendance.

Commanding Officers attending the Conference were: Colonel B. P. Kearney of No.

11 Dental Company, Edmonton; Colonel C. E. Purdy, Commandant of the R.C.D.C. School; Colonel A. C. Leman of No. 13 Dental Company, Trenton; Colonel A. T. Roger of No. 12 Dental Company, Halifax; Lt.-Col. R. B. Jackson of No. 14 Dental Company, Winnipeg; and Lt.-Col. J. G. Butler of No. 15 Dental Company, Montreal.

RETIREMENT, PROMOTIONS

Army Headquarters has announced the retirement of Lt.-Col. W. R. Cunningham, senior clinician at H.M.C.S. Stadacona, Halifax.

Lt.-Col. Cunningham was born in Elgin, Manitoba, received his early education at Souris Collegiate and was granted his D.D.S. from the University of Toronto in 1934. He is married and has one daughter.

Commissioned as a lieutenant, Canadian Dental Corps in 1939, he served with Nos. 10 and 5 Companies in Canada until October 1941 when he was promoted to captain and proceeded to Hong Kong with Headquarters "C" Force. Although taken prisoner by the Japanese in December 1941, he continued to minister to Canadian prisoners of war during his period of captivity, and was promoted major in February 1944. He returned to Canada in October 1945 and served with Nos. 21, 22, 13 and 11 Dental Companies until December 1951 when he was posted to the Directorate of Dental Services, Army Headquarters. He was promoted lieutenant-colonel in 1953 and posted overseas as Commanding Officer, No. 35 Field Dental Unit in France. On his return to Canada in 1955 he was appointed senior operator, Camp Borden and assumed his present appointment in July, 1959.

Army Headquarters has also announced the promotion of Major G. E. Windsor to the rank of lieutenant-colonel and Captain R. J. Bryant to the rank of major.

Lt.-Col. Windsor is a native of Kamsack, Saskatchewan. After completing his senior matriculation in 1940 he attended the University of Alberta and the University of Saskatchewan where he received his B.A. in 1943. He enlisted in the R.C.A.F. the same year and qualified as a navigator. Following demobilization he returned to university and was granted his D.D.S. from the University of Alberta in 1949. On graduation he was promoted captain and posted to Western Command. Since that time he has had two tours of duty with dental units in France and Germany and received his present appointment as senior dental officer in London, Ontario in August 1961. Lt.-Col. Windsor is married with two daughters.

Major Bryant was born in Dauphin, Manitoba and received his early education there. He completed high school in Lindsay, Ontario in 1939 and enlisted in the Canadian Dental Corps the same year, serving overseas from 1941 to 1945. Major Bryant received his dental training at the University of Toronto and graduated in 1952. Since that time he has served with the Corps in Ontario, Manitoba and overseas with No. 35 Field Dental Unit in France. He is at present employed at R.C.A.F. Station, Portage la Prairie where he resides with his wife and three children.

U. S. DENTAL OFFICER AT R.C.D.C. SCHOOL

Major George Kuttas, U. S. Army Dental Corps, Fort Ord, California attended the Officers' Casualty Care and Officers' Clinical Course at the R.C.D.C. School, February 15-16.

COURSE ATTENDANCES

A number of R.C.D.C. dental officers have recently attended a variety of courses in Canada and the United States:

University of Michigan: Lt.-Col. O. W. Crummey, Oral Surgery.

Ent Air Force Base, Colorado Springs: Major J. A. Lauziere, Oral Surgery.

U. S. Navy Dental School, Bethesda, Maryland: Major W. H. Carter, Periodontics; Major J. M. Donely, Crown and Bridge; Majors T. C. Gaudet and A. L. Kelland, Partial Dentures; Major I. W. Susser, Oral Surgery.

Canadian Forces Medical Services Training Centre, Camp Borden: Major J. I. Gordon and Captains J. T. Marshall and C. G. Travis,

Medical and Dental Officers Nuclear, Bacteriological and Chemical Warfare Course.

Royal Canadian Dental Corps School, Camp Borden: Lt.-Col. G. E. Windsor, Majors R. E. Dyer, E. D. Fraser, J. M. Smith, C. G. B. Grant, J. G. Andrews, L. R. Pierce and L. A. Richardson, Officers Casualty Care and Officers Clinical Courses. Majors M. J. Albinati and G. L. Locke of the R.C.D.C. Militia also attended the Casualty Care Course.

Public Health

ONTARIO, ALBERTA, PUBLIC HEALTH DENTISTS MEET

The following officers for the ensuing year were elected at a meeting of the Ontario Association of Public Health Dentists held in Toronto, December 1, 1961; J. W. M. Lawrence of Scarborough, chairman; S. L. Honey of Welland, secretary; and R. E. Feasby of Toronto, representative to the Dental Public Health Committee of the Ontario Dental Association.

A sub-committee comprised of R. M. Grainger, H. K. Brown and R. E. Feasby, chairman, was established to investigate the requirements and possibilities for specialty recognition of dental public health by the Canadian Dental Association.

A conference of dental officers from health units and city health departments was held at the University of Alberta on October 30-31, 1961.

FLUORIDATION WINS, LOSSES IN ALBERTA AND ONTARIO

Several fluoridation plebiscites were held in Alberta in conjunction with recent municipal elections, and three towns succeeded in getting the necessary two-thirds majority: Athabasca, Coaldale and St. Albert. The plebiscites in Calgary and Edmonton were unsuccessful, and these cities must now wait two years before another vote can be taken.

Recent fluoridation plebiscites in Ontario municipalities show five in favour and eight against fluoridation of their water supplies. According to legislation, enacted last year, municipalities may authorize fluoridation by by-law or by plebiscite. Where ten per cent of the voters petition for it, a plebiscite must be held. Results of plebiscites, decided by a

simple majority are binding upon municipal councils.

In December plebiscites, results were as follows: Whitby: yes 874-784; Atikokan: yes 1,018-320; Streetsville: yes 948-427; Renfrew: yes 1,434-1,342; Oakville: yes 4,132-3,518. Rejecting the public health measure were Stouffville 716-432; Trenton 1,734-904; Fort William 8,806-3,215; Port Arthur (voting results not yet available); Port Hope 1,975-721; Tecumseh 399-252; Pembroke 2,923-1,349 and King (voting results not yet available).

A plebiscite is expected in Metropolitan Toronto in 1962. Ottawa city council has decided to fluoridate but the planned starting date next June allows time for 10 per cent of the voters to petition for a plebiscite. Cornwall expects to have fluoridation equipment in operation early in 1962. Cornwall council authorized fluoridation by by-law, as did Burlington, which began fluoridation some time ago, following Port Credit and Toronto Township.

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

HAEMORRHAGIC BONE CYST OF THE MANDIBLE

To the Editor:

We were most interested to see the article "A Case of Haemorrhagic Bone Cyst of the Mandible" by Dr. A. A. Antoni et al. (*J. Canad. D.A.* 27:732, November 1961). There are, however, one or two points which have not been made clear in this article and we list them for your information.

1. The dental examination is very cursorily reported. There is no mention of the number of teeth, the occlusion, the type of restorations, the presence or absence of impacted or unerupted teeth and, particularly, the vitality

of the teeth on the affected side as compared to the non-affected side. All these factors, particularly the last mentioned, have a bearing on the preliminary diagnosis, the treatment plan and the prognosis.

2. The lesion is not described adequately nor shown completely by the radiograph. Its size, shape and relationship to contiguous structures are vague. Similarly, as above, no radiographic report is made of the contralateral teeth nor of a general radiographic examination for like lesions elsewhere in the body.

3. There is no report on the serum calcium or phosphatase levels to rule out systemic disease.

4. No alternative or differential diagnosis is given. It is impossible to see how the authors came to a decision on what the lesion might or might not be, and what the plan of operation should be.

5. The extraction of "vital"? teeth in many similar cases such as this is reported by most authors to be unnecessary—Olech, E. et al (*Oral Surg., Oral Med. & Oral Path.* 4:1160, September 1951).

6. The authors give no references to the previous pertinent literature on this subject or to the controversial opinions held as to the aetiology of this lesion.

7. The greatest lack of all is that there is no biopsy report, or suggestion of the use of the hospital diagnostic services for such pertinent examinations as smears of the "fluid?" aspirated from the lesion prior to enucleation.

We recently treated a case similar to this which will be reported later in the *Canadian Medical Association Journal*. The reason for this is to draw the attention of general surgeons to the fact that you need not necessarily extract the teeth or hemi-resect the jaw in such cases as reported by Waldron, C.A. (*Oral Surg., Oral Med. & Oral Path.* 7:88, January 1954).

F. James Marshall, D.M.D., M.S.,
Associate Professor,
Endodontology and Oral Histology,

J. R. Trott, B.D.S. (Adel.),
Associate Professor,
Periodontology,

Faculty of Dentistry,
University of Manitoba,
Winnipeg 3, Manitoba.

To the Editor:

The criticism and comments of Drs. F. J. Marshall and J. R. Trott regarding our case report, "A Case of Haemorrhagic Bone Cyst of the Mandible" are well taken. Actually this article was prepared by our junior intern as an exercise and it inadvertently found its way into print without sufficient editing. I must, however, in all fairness make some defence for ourselves.

We have dealt with several cysts of this type and radiographically they seem to follow a definite pattern. This one did not and

it is this that made the case interesting for us. Unfortunately the radiographs were so poorly reproduced that the point we tried to make was completely lost.

The patient was admitted for surgical exploration or biopsy of the lesion. However, at the time of surgery, our findings were compatible with those of a haemorrhagic cyst. In other words, we found a large empty cavity without lining or substantial contents and we simply curetted the walls of the defect to allow bleeding into the space.

There was really no specimen that we could submit to the pathologist; hence the lack of a formal pathological report. Had this not been the case, we might have considered it necessary to do serum calcium and phosphatase level studies and other radiographic examinations. As a rule we restrict our laboratory studies to essentials and expand on these as each case warrants. We should have explained that the two molars were removed because this patient had three other missing teeth and because the referring dentist felt that he could better serve this patient with a bilateral partial denture than with a unilateral appliance. In view of the fact that a lesion did exist which had destroyed the mandible to a certain extent, we did not feel too badly about the sacrifice in this particular case.

We simply wanted to draw attention to a condition which radiographically did not show what we had expected. We were not attempting a case work-up with every academic phase expanded and researched.

A. A. Antoni, D.D.S., M.Sc.D.
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Toronto, Ontario.

Ed. Note.—The quality of Journal illustrations is entirely determined by the quality of glossy prints submitted by authors. Coloured glossy prints, such as were submitted with the article in question, cannot be reproduced as satisfactorily as black and white glossy prints.

BOOK REVIEWS

CROWNS: PREPARATION OF THE TEETH AND CONSTRUCTION OF THE VARIOUS TYPES OF FULL COVERAGE RESTORATIONS

S. C. Brecker. Philadelphia and London, W. B. Saunders Co., 1961. Available through McAlinsh & Co., Toronto and Vancouver. 495p. Illus. \$16.00.

This text book deals exclusively with preparation and fabrication of the full crown as porcelain jacket crown, full gold crown, and as porcelain or acrylic veneer gold crown. It is of value to the undergraduate student and practising dentist alike. Intra-oral operative procedures are described in detail and are well illustrated. Anyone who has not done a crown preparation for some time could benefit from the author's advice expressed in the second part of chapter 2 with regard to carrying out technique exercises on a model or on extracted teeth.

Impression techniques and laboratory procedures for the various types of restorations are fully described. The reader's attention is particularly directed to the final portion of the book, viz. chapters 19-30. Students and practitioners will gain information which is of value in guiding their technicians. The latter will gain information which will help them to serve the dentist more effectively.

The book, unfortunately, has some shortcomings. The author might have devoted less space to conventional speed preparation techniques and emphasized high-speed techniques instead. Furthermore, he has neglected to evaluate the use of the rubber dam which, in combination with an effective suction apparatus, eliminates obstruction from the cheeks, lips, tongue and floor of the mouth and greatly simplifies the intra-oral operative procedures.

Ce livre, entièrement consacré à la couronne complète, en porcelaine ou en or seul, ou fenêtrée de porcelaine ou d'acrylique, peut servir tant à l'étudiant qu'au praticien qui tous deux doivent apprendre ou réapprendre selon le cas. En effet la technique de tailler des couronnes est vue en détail avec force exemples et photos. Le praticien qui n'a pas taillé de couronne depuis quelques années aurait avantage à suivre les conseils

que l'auteur donne dans la deuxième partie du chapitre No 2, à savoir faire quelques exercices sur dents d'ivoirine ou sur dents extraites. Il n'en faudrait pas extraire à la seule fin d'en obtenir pour ces exercices, toutefois!

L'auteur décrit longuement les techniques de la prise des empreintes et les procédés de laboratoire pour la confection des différentes sortes de couronnes. Tous, étudiants, praticiens et techniciens trouveraient leur profit à consulter les chapitres de la fin soit du No 19 au No 30, les deux premiers groupes pour pouvoir mieux conseiller leurs techniciens et ces derniers pour pouvoir mieux servir les dentistes.

Il y a malheureusement des lacunes dans ce si beau bouquin. L'auteur aurait pu s'étendre quelque peu moins sur l'usage des vitesses conventionnelles et davantage sur celui des ultra-hautes vitesses.

De plus, il a manqué une chance merveilleuse de faire valoir la simplification du problème de la préparation d'une couronne par l'emploi de la digue, cet accessoire qui, combiné à la suction rapide élimine à la fois les problèmes que créent la joue, la lèvre, la langue, le plancher de la bouche, etc.

G. H. Deschênes

ORAL MEDICINE, DIAGNOSIS AND TREATMENT

L. W. Burket. Ed. 4. Philadelphia and Montreal, J. B. Lippincott Co., 1961. 609p. Illus. \$15.00

The time has passed when the dentist was considered to have fulfilled his duties when he had attended to lesions of the teeth. The public now expects the dentist to be competent in the general field of oral medicine. Since some of the lesions which occur in and about the mouth are seen infrequently or even rarely, it is desirable that every practitioner have in his library an authoritative text on oral medicine.

The text by Burket, with a chapter by Castigliano, is adequately extensive and thoroughly authoritative. The 4th edition displays a number of revisions as compared to the 3rd edition. Most notably the section on "Dermatologic Diseases of Dental Interest" has been re-organized so that the white lesions of the oral mucosa are grouped as are the vesicular and bullous lesions. This arrangement simplifies clinical diagnosis. A section on "Oral Medicine for the Complete Denture Patient" has been added.

The chapter on the "Occupational Diseases to which the Dentist is Exposed" is of particular and topical interest. The section on "Oral Cancer" in forty-seven pages, provides a wealth of expertly condensed information which every dentist should read each year.

More than twenty-five per cent of the book is devoted to the "Mouth Manifestations of Diseases of the Organ Systems" such as those of the respiratory, cardiovascular and gastrointestinal systems. It is profusely illustrated with 380 black and white and forty colour illustrations. The black and white illustrations are surprisingly effective, but the colour illustrations, while they are adequate, lack the sharpness of detail and accurate colour rendition to which we have become accustomed.

The table of contents lists lesions according to position, main clinical characteristic and cause. There is also an extensive cross-reference system within the index. These provisions facilitate the process of diagnosis and the determination of treatment.

It is altogether an excellent book which can be highly recommended.

C. H. M. Williams

THE DENTIST AND HIS ASSISTANT

S. Peterson. St. Louis, C. V. Mosby Co., 1961. 319p. Illus. \$8.75.

Perhaps the top priority problem facing the dental profession today is the means whereby more quality dental services may be brought to the people of our land, so that greater enjoyment of the fruits of good dental health in its broadest sense may be realized by a larger spectrum of our population. Linked to this problem is the total dental manpower supply, which combined with the ills of geographic distribution necessitates extra hands to aid the already overburdened, busy practitioner. The role of the dental assistant in a more comprehensive program of chairside assistance can only result in more efficient dental service.

It is not surprising that Dr. Shailer Peterson, a man of considerable stature in dental educational circles, chooses to edit a masterfully conceived and executed digest for the dental assistant, whether "on the job", or as a text for more formal courses of training. In addition, his stated objective—to offer his text as a guide to salesmen, advertisers, manufacturers, and technicians—is further enhanced by supplying a useful prospectus for the prospective dental student.

A group of nine men and women, all distinguished in their various fields, have assembled their talents under Dr. Peterson's editorship. Profusely illustrated, the text makes for easy reading and reference. Although written for the dental assistant, its perusal by any conscientious dentist will undoubtedly prove most rewarding, no matter in what field he may be engaged.

The lack of a trained dental assistant proves a distinct loss to the busy dental practice. In-service training is equally difficult. The text fills to a degree this void and serves as a first rate précis on dental assisting.

Dr. Charles Belting has categorized the entire practice of dentistry, with the exception of orthodontics. He explains the philosophy of treatment, outlines step-by-step procedures, and then under the heading "Guidelines for the Assistant", he discusses the correlation of the steps between dentist and assistant. The details of this chapter are most commendable.

Other chapters are "The History of Dentistry" by Dr. Walter Pelton; "Study Model Preparation, Housekeeping Duties, and Equipment and Supplies" by Dr. Roger Barton; "Dental Health Education" by Dr. Maynard Hine; "The Nature of Dental Materials" by Dr. Ralph Phillips; "Sterilization Procedures and the Approach to the Patient" by Dr. Kenneth Wessels; and "Working with Roentgenograms" by Dr. Harrison Berry Jr. Each chapter is an individual gem.

No text of this type would be complete without a contribution by those whose attention has been concerned directly with dental assisting as related to office administration. This chapter is most complete in explaining the myriad duties associated with the field and was capably written by Elizabeth Linn and Tillie Ginsburg of the dental hygiene staff of Marquette University. A fine glossary of dental terminology and definitions completes the book.

It is difficult to offer criticism of the objectives, the scope and the detail included in this text. It proved to be a rewarding tour through the many facets of dental practice which daily consume the efforts of the dental practitioner in this fine profession of ours.

J. D. Purves

ADDITIONS TO THE LIBRARY

- AFONSKY, D. Saliva and its relation to oral health; a survey of the literature. University of Alabama Press, 1961. 785 p. \$12.00
- ALLEN, A. G. A pocket dental prosthetics. London, Churchill, 1961, 156 p. illus. \$2.85
- AMERICAN DENTAL ASSOCIATION. COUNCIL ON DENTAL THERAPEUTICS. Accepted dental remedies. 27th ed. Chicago, 1962. 235 p. \$3.00
- BLEICH, A. R. The story of x-rays from Roentgen to isotopes. New York, Dover Publications, Inc., 1960. 186 p. illus. \$1.50
- GURLEY, J. E. Professional ethics in dentistry. St. Louis, American College of Dentists, 1961. 113 p. \$8.00
- HOTZ, R. Orthodontia in everyday practice. Montreal, Lippincott, 1961. 406 p. illus. \$15.00
- INGRAHAM, R. and KOSER, J. R. An atlas of gold foil and rubber dam procedures. 1st ed. Buena Park, Calif., Uni-Tro College Press, 1961. 102 p. illus. \$17.00
- JEWKES, J. and JEWKES, S. The genesis of the British National Health Service. Oxford, Basil Blackwell, 1961. 68 p. \$1.00
- KERR, A. C. The physiological regulation of salivary secretions in man; a study of the response of human salivary glands to reflex stimulation. New York, Pergamon Press, 1961. 86 p. illus. \$6.50
- KORENHOF, C. A. W. Morphogenetical aspects of the human upper molar. Utrecht, Uitgeversmaatschappij Neerlandia, 1960. 368 p. illus. \$7.00
- LUCIA, V. O. Modern gnathological concepts. St. Louis, Mosby, 1961. 610 p. illus. \$10.00
- MEARES, A. A system of medical hypnosis. Philadelphia, Saunders, 1960. 484 p. illus. \$10.00
- MORE, D. M. The dental student. Reprinted from the March issue of the *Journal of the American College of Dentists*, St. Louis, Mo., 1961. 93 p. \$8.00
- PARSONS, E. J. In the doctor's office; the art of being a medical assistant. 2nd ed. Montreal, Lippincott, 1956. 326 p. illus. \$4.75
- PETERSON, S. The dentist and his assistant. St. Louis, Mosby, 1961. 319 p. illus. \$8.75
- PICKARD, H. M. A manual of operative dentistry. London, Oxford University Press, 1961. 154 p. illus. \$5.25
- PRICHARD, J. F. Periodontal surgery. (Practical Dental Monographs, November 1961) 32 p. illus.
- THE RESEARCH INSTITUTE OF THE HOSPITAL FOR SICK CHILDREN, Toronto, Canada. The cleft lip and cleft palate research and treatment centre. A five year report, 1955-1959. 275 p. illus.

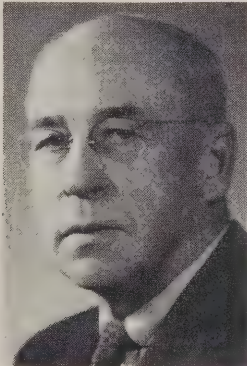
IN MEMORIAM

JOHN STANLEY BAGNALL — The dental profession has suffered a tragic loss in the death of Dr. John Stanley Bagnall. A prominent dental teacher, Dr. Bagnall died in Halifax on January 11, 1962. Long active as an officer of dental organizations, he was secretary of the Canadian Dental Association from 1927 to 1942.

Dr. Bagnall was born in Charlottetown, Prince Edward Island, in 1888. Following service during the first world war as an artillery captain with the 8th Canadian Siege Battery, he entered the Faculty of Dentistry at Dalhousie University. Upon graduation in 1921, he became a full-time staff member of the dental school. Advanc-

ing through various teaching appointments, he became dean of the faculty in 1947, retaining this position until his retirement in 1954. In 1955 Dr. Bagnall was named Dean Emeritus. For many years he was also chief of the dental department of Victoria General Hospital, Halifax. Dr. Bagnall also served as dental consultant to the Marine Section, Halifax Infirmary; the Halifax D.V.A. Hospital; the Halifax Tuberculosis Hospital, and Halifax Public Health Clinic.

Dr. Bagnall had a long association with provincial, national and international dental groups. As well as being secretary of the Canadian Dental Association, he served as secretary of the Nova Scotia Dental Association between 1923 and 1942. He is a past president of that organization. Dr. Bagnall was also active in the International Association for Dental Research.



J. S. Bagnall

Author of the text *Research on Dental Caries*, published in 1950, Dr. Bagnall commenced work on a history of the dental profession in Canada two years ago, a task in which he was still engaged at the time of his death.

The recipient of numerous honours, Dr. Bagnall held the degree F.D.S.R.C.S. (Eng.) of the Royal College of Surgeons of England, F.D.S.R.C.S. (Edin.) of the Royal College of Surgeons of Edinburgh and LL.D. (Dal.) of Dalhousie University. He was an honorary member of the Canadian Dental Association, and a fellow of the International College of Dentists.

Beyond dentistry, Dr. Bagnall's activities encompassed a wide range of interests. He was a past president of the Waegwoltic Club.

Dr. Bagnall is survived by his wife, Rita; daughter, Catherine (Mrs. R. J. Barcham) of Devon, England; son, Lt.-Col. S. Geoffrey of the Royal Canadian Dental Corps, Camp Borden, Ontario; sister, Helen (Mrs. W. H. V. Dunbar) of Charlottetown; sister, Mrs.

Sheldon Matheson of Charlottetown; and brother, Manning of Charlottetown.

The most sincere sympathy of the dental profession is extended to Mrs. Bagnall and the family.

B. S. BAILEY—Dr. B. S. Bailey of Portage la Prairie, Manitoba, died on December 22, 1961. He was 70 years of age. Dr. Bailey studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1914. He served with the Canadian Dental Corps in world wars I and II. He is a past president of the Manitoba Dental Society. Dr. Bailey is survived by his wife, Hope; three children and three grandchildren.

LORNE GARFIELD CARSON — Dr. Lorne Garfield Carson of Winnipeg, Manitoba, died in the latter part of 1961. He was 63. Dr. Carson practised for many years in the Yukon and North West Territories. He is survived by his wife.

DONALD J. CHERRY — Dr. Donald D. Cherry of Edmonton, Alberta died on November 30, 1961 as the result of a driving accident. He was 32. Dr. Cherry was born in 1929. He graduated from the University of Alberta in 1956.

JOHN STEVENSON COMMON — Dr. John Stevenson Common of Montreal, P. Que., died on October 27, 1961. He was 71. Dr. Common was born in Montreal in 1890. He studied dentistry at McGill University, graduating in 1920, and practised in Montreal from that time.

JOSEPH I. FREEMAN — Dr. Joseph I. Freeman of Winnipeg, Manitoba died on December 31, 1961. He was 50 years of age. Born in Winnipeg, Manitoba, Dr. Freeman studied dentistry at the University of Minnesota, graduating in 1938. He served in the Royal Canadian Air Force from 1941-45. Subsequently, he was on the staff at the St. Boniface General Hospital, the Misericordia Hospital, Grace Hospital and the Winnipeg General Hospital as oral surgeon. Dr. Freeman was also a member of the American Academy of Oral Surgery. He is survived by his wife, Charlotte, sons, Jeffrey and Richard; daughter, Carole and three brothers, Mitchell, Alex and Louis J.

DENIS FOREST — Le Dr. Denis Forest de Montréal, âgé de 67 ans, est décédé le 20 janvier, 1962. Il était né à Lavaltrie, P. Qué. en 1894. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1919. Membre honoraire du Collège des chirurgiens dentistes de la province de Québec, il avait été aussi le registraire de cet organisme pendant plusieurs années.

CHARLES STANLEY LAWRENCE — Dr. Charles Stanley Lawrence of Wallaceburg, Ontario died on December 27, 1961. He was 61. Dr. Lawrence was born in Lambton County, Ontario in 1900. He studied dentistry at the Royal College of Dental Surgeons of Ontario and graduated in 1924. He was a past president and secretary of the Kent County Dental Association. Dr. Lawrence practised for one year following his graduation in Toronto, after which he set up practice in Wallaceburg. He is survived by two brothers, William Lawrence of Thamesville and Stuart Lawrence of Riverside; and two sisters, Mrs. Mary Livingston of Riverside and Mrs. Marguerite Routeledge of Ridgetown.

GEORGE HONARE LEVESQUE — Dr. George Honare Levesque of Sturgeon Falls, Ontario, died on November 30, 1961. Dr. Levesque was born in Sturgeon Falls and received his early education there. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1919. He set up his own practice in Sturgeon Falls at that time, and maintained it until his retirement in 1945. He is survived by his wife Loretta.

BRETT BAXTER LOOMER—Dr. Brett Baxter Loomer of Stellarton, Nova Scotia died on December 31, 1961. He was 76. Dr. Loomer was born in Sheffield Mills, Nova Scotia in 1885. He studied at the University of Pennsylvania, and graduated in 1905. He is survived by one daughter, two sons and eight grandchildren.

JOHN ARCHIBALD MacGREGOR — Dr. John Archibald MacGregor of Regina, Saskatchewan died on October 2, 1961. He was 79. Dr. MacGregor was born in Claude, Ontario in 1882. He practised in Regina from 1916 to 1957. He was a past president of the Regina Dental Society. Dr. MacGregor is survived by his wife, Alice Beatrice; sons, Donald MacGregor of Calgary,

Roderick MacGregor of Regina and Alex MacGregor of Toronto.

LLOYD ALFRED MOFFATT — Dr. Lloyd Alfred Moffatt of London, Ontario died on December 10, 1961. He was 74. Dr. Moffatt was born in Varna, Ontario in 1887. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1911. Dr. Moffatt practised for many years in London, Ontario until his retirement in 1955. He is survived by three nieces, Mrs. Helen Howarth of California; Mrs. Elizabeth Boyce of Ottawa and Mrs. Marjorie Meier of Michigan; and one nephew, Mr. Harry Fair of Ohio.

RAY BIRD MULLONEY — Dr. Ray Bird Mulloney of Kentville, Nova Scotia, died on May 24, 1961. He was 89. Dr. Mulloney was born in Nova Scotia in 1872. He studied dentistry at Tufts University Dental School in Boston, graduating in 1894. He practised from that time until his retirement in 1946.

J. OMER PREVOST — Le Dr. J. O. Prévost de Montréal, âgé de 56 ans, est décédé le 3 janvier, 1962. Il était né à St.-Sulpice, P. Qué. en 1905. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1928.

LLOYD G. RICHARDSON — Dr. Lloyd G. Richardson of Campbellford, Ontario, died on January 2, 1962. He was 40 years of age. Dr. Richardson was born in Campbellford, Ontario in 1921. He studied dentistry at the University of Toronto, graduating in 1942. He served in the Canadian Dental Corps during the second world war, after which he set up practice in his home town of Campbellford. He is survived by his wife, Mary Elizabeth; a daughter, Jane Elizabeth; sons, Frederick Henry and George Edward; his father, Dr. H. O. Richardson of Campbellford; a sister, Mrs. Enid Loucks of Ajax; brothers, W. R. Richardson of Smiths Falls, H. E. Richardson, Q.C., of Lindsay and Dr. R. F. Richardson of Port Hope.

ROBERT DAVIDSON WALLACE—Dr. Robert Davidson Wallace of Burford, Ontario died on January 6, 1962. Dr. Davidson studied dentistry at the Royal College of Dental Surgeons of Ontario, and graduated in 1916. He is survived by his wife Gladys and one daughter, Mrs. Margaret Linda Beck of Toronto.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
March 15-18, 1962	Intl. Association for Dental Research	Sheraton Jefferson Hotel, St. Louis, Missouri	Dr. J. C. Muhler	Indiana University Medical Centre, 1100 W. Michigan Street, Indianapolis, Ind.
March 22, 1962	Academy of Dentistry, Toronto, 3rd Stated Meeting	Faculty of Dentistry, University of Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ont.
May 13-16, 1962	Ontario Dental Association Convention	Royal York Hotel, Toronto	Mrs. W. C. Durham	230 St. George Street, Toronto 5, Ont.
24-26 mai, 1962	Congrès de l'Association dentaire de la province de Québec	Hôtel Chicoutimi, Chicoutimi	Dr. J. D. Simard	397 Racine Est, Chicoutimi, P. Qué.
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eaton	Farquhar Bldg., Halifax, N.S.
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Baume	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20, 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.1, England
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Building, Prince Albert, Sask.
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Qué.
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior Street, Chicago, Ill.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

ALABAMA—May 12-14, 1962—Use of the Edgewise Appliance in Adult Orthodontics
 ALABAMA—May 21-23, 1962—Anatomy of the Head and Neck
 NORTHWESTERN—May 7-8, 1962—Endodontics
 NORTHWESTERN—May 14-16, 1962—Current Concepts in Operative Dentistry
 NORTHWESTERN—June 24-26, 1962—Advanced Cephalometric Radiography
 OHIO STATE—May 2-3, 1962—Elastic Impression Materials and Techniques
 TEMPLE—May 5, 1962—Full Denture Seminar
 TEMPLE—May 7-11, 1962—Full Denture Prosthesis
 TUFTS—May 2-4, 1962—Clinical Adjustment of the Occlusion
 TUFTS—May 8-10, 1962—Minor Oral Surgery
 TUFTS—May 14-16, 1962—Experimental Oral Pathology
 TUFTS—May 21-23, 1962—Children's Dentistry for the General Practitioner
 TUFTS—May 22-23, 1962—Treatment of Pain in the Temporomandibular Joint
 YESHIVA—May 3-4, 1962—Dental Alveolar Surgery
 YESHIVA—October 22-26, 1962—Periodontics

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institutions.

Canadian Society of Orthodontists
(Orthodontic Section of the Canadian Dental Association)
Annual Scientific Meeting, Vancouver, B.C., June 3-5, 1962

Sunday, June 3

10:30 A.M. *Essayist* — Dr. A. G. Brodie
University of Illinois, Chicago, Illinois

2:00 P.M. *Annual Business Meeting*

Monday, June 4

10:40 A.M. *Essayist* — Dr. A. G. Brodie
Grieve Memorial Lecture

2:00 P.M. *Essayist* — Dr. E. H. Nixon
University of Oregon, Portland, Oregon
"Some Problems with Regard to Serial Extraction"

Tuesday, June 5

9:00 A.M. *Essayist* — Dr. E. H. Nixon
"Some Problems in Diagnosis and Treatment
Planning of Class III Malocclusions"

2:00 P.M. *Orthodontic Clinics*

For further information write:

Dr. J. J. Schachter, 209 Canada Building, Saskatoon, Saskatchewan.

Canadian Society of Oral Surgeons
(Oral Surgery Section of the Canadian Dental Association)
Annual Scientific Meeting, Vancouver, B.C., June 4-6, 1962
Hotel Vancouver and Queen Elizabeth Theatre

Clinicians

Dr. Robert Johnson	Seattle, Washington
Dr. John Folkins	Vancouver, British Columbia
Dr. P. T. Smylski	Hamilton, Ontario

For further information write:

Dr. D. H. MacDonald, 2 College Street, Toronto, Ontario.

CONVENTION SUPPLEMENT

Joint Meeting

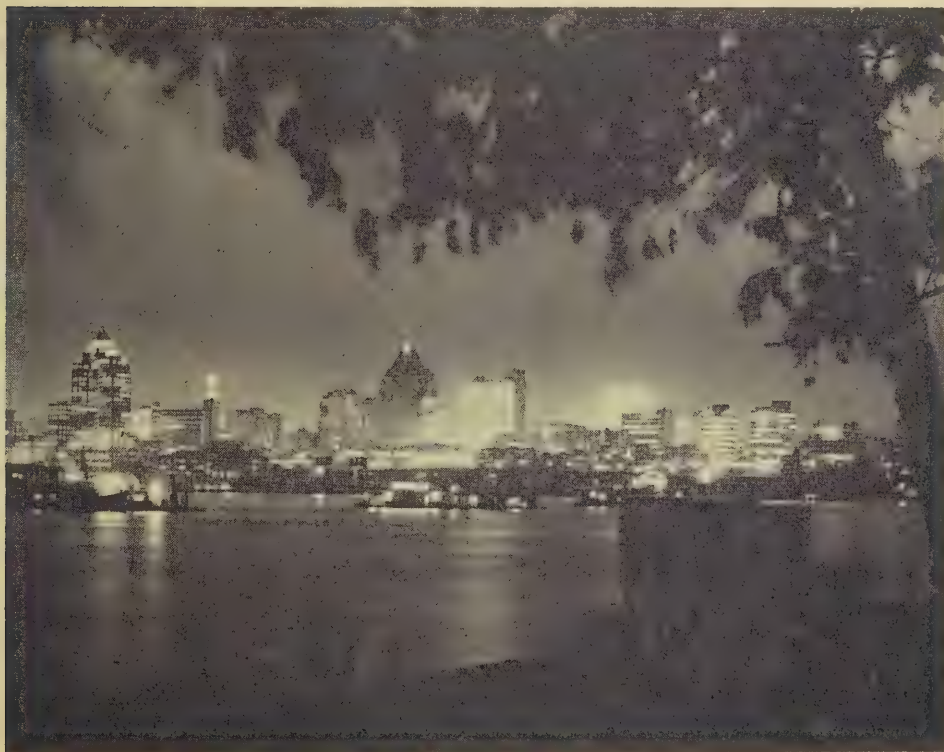
THE CANADIAN DENTAL ASSOCIATION

and

THE BRITISH COLUMBIA
DENTAL ASSOCIATION

JUNE 3-6, 1962

Queen Elizabeth Theatre, Vancouver, British Columbia



Rolly Ford

Vancouver's skyline by night, as seen from Stanley Park across Burrard Inlet.

CONVENTION

All events will take place at the Queen Elizabeth Theatre

Sunday, June 3, 1962

- | | |
|------------|--|
| 10.30 A.M. | <i>Orthodontic Section Essay</i>
Dr. A. G. Brodie, Chicago |
| 2.00 P.M. | <i>Orthodontic Section—Annual Business Meeting</i> |
| 4.00 P.M. | Registration |
| 8.30 P.M. | Sunday Musicale |
| 9.30 P.M. | Social Hour, Impromptu Music and Refreshments
Art Exhibit will be open at this time |

Monday, June 4, 1962

- | | |
|------------|---|
| 8.00 A.M. | Registration |
| 8.30 A.M. | <i>Opening Ceremonies</i>
Rev. R. Cunningham, Mayor A. T. Alsbury |
| 9.00 A.M. | <i>Essay—Principles of Time, Motion and Stress</i>
Dr. J. A. Anderson, Chicago |
| 10.30 A.M. | <i>Panel—Should Dentistry Consider Group Practice?</i>
Mr. J. E. McIntosh, C.A., Vancouver
Dr. S. R. Katz, Winnipeg |
| 10.45 A.M. | <i>Grieve Memorial Lecture</i>
Dr. A. G. Brodie, Chicago |
| 12.30 P.M. | CANADIAN DENTAL ASSOCIATION LUNCHEON—The Commodore
Guest Speaker: Hon. W. A. C. Bennett, Premier of British Columbia |
| 2.00 P.M. | <i>Orthodontic Section Essay—Some Problems with Regard to Serial Extraction</i>
Dr. E. H. Hixon, Portland, Oregon |
| 3.00 P.M. | <i>Essay—Studies in Dental Practice</i>
Dr. J. A. Anderson, Chicago |
| 4.30 P.M. | <i>Essay—Office Use of Silver Nitrate and Stannous Fluoride in Caries Control</i>
Dr. R. J. O'Neill, Vancouver |
| 4.30 P.M. | <i>Essay—The Auxiliaries' Role in Patient Education</i>
Miss L. Kryger, R. D. H., Seattle |
| 9.00 P.M. | DANCE CRUISE UP HOWE SOUND ON A "PRINCESS" SHIP
Early registration requested. Attendance limited to 1,200 persons |

SCIENTIFIC EXHIBITS

British Columbia Government Health Branch—"Preventive Dentistry"
Royal Canadian Dental Corps—"The Dentist's Role in Survival"
Monday: 10-12 Noon and 3-5 P.M. Tuesday: 10.30-12 Noon and 3.30-5.30 P.M.

TABLE CLINICS

Monday: 3-5 P.M. Tuesday: 10.30-12 Noon and 3.30-5.30 P.M.
Wednesday: 3-5 P.M.

ART EXHIBIT

Open daily, including Sunday evening

COMMERCIAL EXHIBIT

Open daily

GOLF

Play for C.D.A. trophy will take place at participants' convenience

PROGRAM

and adjoining Little Theatre unless otherwise indicated

Tuesday, June 5, 1962

- 8.30 A.M. Registration
- 9.00 A.M. Essay—Philosophy and Application of Principles to Everyday Dental Practice: Part 1
Dr. J. A. Anderson, Chicago
- 9.00 A.M. *Orthodontic Section Essay*—Some Problems in Diagnosis and Treatment Planning of Class III Malocclusions
Dr. E. H. Hixon, Portland, Oregon
- 10.40 A.M. Essay—Psychology for the Dental Patient
Dr. R. Haney, Sherman Oaks, California
- 11.00 A.M. Essay—Auxiliary Help
Dr. H. W. Fleege, Seattle
- 12.30 P.M. COLLEGE OF DENTAL SURGEONS OF BRITISH COLUMBIA LUNCHEON—The Commodore
- 2.00 P.M. Essay—Philosophy and Application of Principles to Everyday Practice: Part 2
Dr. J. A. Anderson, Chicago
- 2.00 P.M. *Orthodontic Section*—Orthodontic Clinics
- 3.30 P.M. Panel—Pain in Dentistry
Dr. G. M. Ling: Local Anaesthetics; Dr. E. Webb: General Anaesthetics; Dr. F. A. Reid: Premedication; Dr. R. Haney: Psychological Aspects

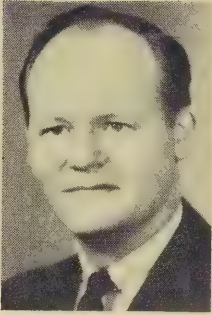
Wednesday, June 6, 1962

- 9.00 A.M. Essay—Evaluation of High-Speed Cutting Tools
Dr. K. R. Cantwell, Portland
- 9.00 A.M. Essay—Hypnosis in Dentistry
Dr. H. W. Mason, Galt, Ontario
- 9.00 A.M. *Question and Demonstration Period*
Wasatch Study Group
- 10.30 A.M. *Canadian Dental Association Panel*—Socio-Economic Changes in Dentistry
Dr. M. G. Taylor, Principal, University of Alberta at Calgary—
"Politicalization of Health Care"
Mr. A. Andras, Canadian Labour Congress, Ottawa—
"Labour Looks at Health Care"
- 12.30 P.M. BRITISH COLUMBIA DENTAL ASSOCIATION LUNCHEON—
The Commodore
- 2.00 P.M. *Closed Circuit Television Demonstrations*
Wasatch Study Group: Practical Application of Time and Motion Studies;
Dr. H. W. Fleege: Case Presentation in Paedodontics; Dr. H. W. Mason:
Practical Demonstration of Hypnosis; Dr. M. Waterman: Full-Mouth
Radiographic Survey; Dr. C. Ames: Endodontics; Dr. K. Lindsay: Impac-
tion; Dr. W. R. Scott: Occlusal Correction
- 6.30 P.M. Cocktail and Social Hour—The Commodore
- 7.30 P.M. C.D.A. President's Banquet
- 9.30 P.M. C.D.A. President's Ball

CANADIAN ACADEMY OF PERIODONTOLOGY

Annual Scientific Meeting: June 3-4. Essayist: Dr. K. F. Box, Toronto.
Presentations: Edmonton and Vancouver Periodontal Study Clubs. For further information write:
Dr. J. W. Neilson, Room D-113, Faculty of Dentistry, University of Manitoba, Winnipeg 3, Manitoba.

CONVENTION



Harrison-Youngberg

John A. Anderson, D.D.S., F.A.C.D.

Member of the postgraduate teaching staff at Northwestern University Dental School, Chicago. Past president of the Sanders Dental Research Group and a member of the Milwaukee Dental Research Group.

SUBJECT: Practice Management

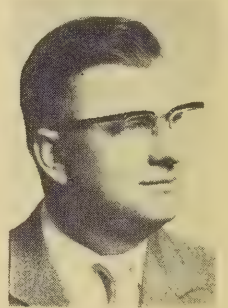
SYNOPSIS: Dr. Anderson will present a philosophy of dentistry which incorporates the principles of time and motion studies as related to efficiency in operative and restorative procedures, organization of routines in the dental office, the fuller utilization of auxiliary personnel, and the more efficient design and layout of office equipment.

Herbert W. Fleege, D.D.S.

A graduate of the University of Iowa. Past clinical instructor in Paedodontics at the University of Iowa and University of Washington dental schools. Member of the American Society of Dentistry for Children and the American Academy of Dental Practice Administration.

SUBJECT: Auxiliary Help

SYNOPSIS: Dr. Fleege will describe the efficient use of auxiliary help and will also demonstrate, on closed circuit television, case presentation for a child patient.



Russell Haney, B.A., M.A., Ph.D.

Consulting psychologist at Los Angeles County General Hospital. Director of Children's Speech and Hearing Clinic. Clinical instructor at the University of Southern California. Research consultant, San Fernando Valley College.

SUBJECT: Psychology for the Dental Patient

SYNOPSIS: Techniques of communication; handling of anxiety, stress, fear and anger; how to make the patient a part of the treatment process.

ESSAYISTS

H. W. Mason, D.D.S.

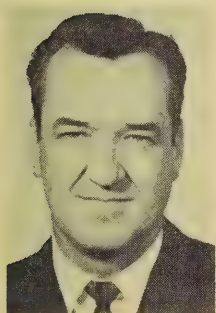
A graduate of the University of Toronto with more than ten years' experience of hypnosis applied to the practice of dentistry. Private practitioner and also school dentist in Galt, Ontario.

SUBJECT: *Hypnosis*

SYNOPSIS: *Dr. Mason will present and demonstrate the practical use of hypnosis applied to all phases of dentistry in both children and adults.*



Galt International



Peter Pan

Kenneth R. Cantwell, D.M.D., F.A.C.D.

Professor of Dentistry and head of the Department of Operative Dentistry, University of Oregon Dental School, Portland. Member of the American Academy of Gold Foil Operators and instructor at postgraduate courses on high-speed instrumentation and operative dentistry.

SUBJECT: *Evaluation of High Speed Cutting Tools*

Wasatch Dental Seminar

This group of dentists from Salt Lake City was formed in 1952 under the leadership of Dr. Albert Thompson to study methods of increasing the efficiency and productivity of the dentist. Six dentists will come to Vancouver to demonstrate, with the use of assistants, the most efficient use of time, motion and equipment in dental practice. Participating in this large scale demonstration will be Drs. David Brown, Robert Sorbonne, Reed Larson, Bart Wolthius, Dee Folsom and Don Buswell. Their daughters will act as their assistants.

CANADIAN DENTAL ASSOCIATION

Official Notice of Annual Meeting

The annual meeting of the Board of Governors of the Canadian Dental Association will be held at the Hotel Vancouver in Vancouver, British Columbia beginning at 9.30 A.M. on Wednesday, May 30 and continuing through Saturday June 2, 1962.

*Don W. Gullett, D.D.S.,
Secretary.*

THE CANADIAN DENTAL NURSES' AND ASSISTANTS' ASSOCIATION

joint meeting with

THE BRITISH COLUMBIA DENTAL ASSISTANTS' ASSOCIATION

June 3-6, 1962

Sunday, June 3, 1962

4.00 P.M.	B.C.D.A.A. — House of Delegates Meeting
5.00 P.M.	C.D.N.A.A. — House of Delegates Meeting
6.00 P.M.	Registration
8.30 P.M.	Reception — Hotel Georgia

Monday, June 4, 1962

8.00 A.M.	Registration
8.30 A.M.	Opening Ceremonies
9.30 A.M.	<i>Speaker</i> — Dr. J. A. Anderson: Practice Management
10.45 A.M.	<i>Presentation</i> — Vancouver Credit Bureau: Accounting
12.30 A.M.	Luncheon — The Beachcomber
3.00 P.M.	<i>Speaker</i> — Dr. J. A. Anderson: Practice Management
4.20 P.M.	<i>Speaker</i> — Miss Louise Kryger
8.30 P.M.	Las Vegas Night

Tuesday, June 5, 1962

9.00 A.M.	<i>Speaker</i> — Dr. J. A. Anderson: Practice Management
11.00 A.M.	<i>Speaker</i> — Dr. H. W. Fleege: Auxiliary Help
1.00 P.M.	B.C.D.A.A. — Annual Meeting
2.00 P.M.	<i>Speaker</i> — Dr. J. A. Anderson: Practice Management
3.00 P.M.	Table Clinics
6.00 P.M.	Cocktail Hour
7.00 P.M.	Smorgasbord — Eayshore Inn

DENTAL ASSISTANTS' REGISTRATION FORM

Miss M. Ashton
148 East 6th Street
North Vancouver
British Columbia

Name
Address
City Province

Registration Fee

Members: \$15.00 Non-Members: \$17.00
Make cheques payable to B.C.D.A. Association.
Accommodation requested at Hotel Georgia:
June 4 ☐ June 5 ☐ June 6 ☐
Single: \$10.00 ☐ Double: \$13.00 ☐ Twin: \$13.50 ☐

EVENTS FOR LADIES

Sunday, June 3, 1962

8.30 P.M.

Sunday Musicale

Monday, June 4, 1962

12.30 P.M.

Luncheon — Bayshore Inn

9.00 P.M.

Dance Cruise on the Blue Pacific

Tuesday, June 5, 1962

2.00 P.M.

Scenic Tour

Tea — Shaughnessy Golf Club

Entertainment

Wednesday, June 6, 1962

12.30 P.M.

Luncheon — Hotel Vancouver

6.30 P.M.

Cocktail and Social Hour — The Commodore

7.30 P.M.

President's Banquet

9.30 P.M.

President's Ball

REDUCED RAILWAY FARES AVAILABLE

Authorization has been granted by the Canadian Passenger Association for reduced railway fares on the Identification Certificate Plan for the Saskatoon meeting.

Authorized dates for the start of travel to Vancouver are as follows:

From stations in Newfoundland

May 20 to 28 inclusive, 1962.

From all stations west of, and including, Port Arthur and Armstrong, Ontario

May 26 to June 3 inclusive, 1962.

From all stations east of Port Arthur and Armstrong, Ontario (except Newfoundland)

May 23 to 31 inclusive, 1962.

C.D.A. members and their dependent families, on the presentation of Identification Certificates (one per family) are entitled to purchase fare round-trip tickets to Vancouver on the authorized dates. This reduced plan is also open to members of the Canadian Dental Nurses' and Assistants' Association.

Identification Certificates may be obtained from the Secretary, Canadian Dental Association, 234 St. George Street, Toronto 5, Ontario.

REGISTRATION FORM

Annual Meeting

CANADIAN DENTAL ASSOCIATION

BRITISH COLUMBIA DENTAL ASSOCIATION

c/o British Columbia Dental Association
925 West Georgia Street
Vancouver 1, British Columbia

Vancouver, British Columbia
June 3-6, 1962

NAME

ADDRESS

CITY PROVINCE

WIFE'S NAME

Golf — Yes ☐ No ☐

REGISTRATION FEE

Single: \$40.00 Wife: \$10.00

Make cheques payable to: C.D.A. 1962 Convention. Fee includes C.D.A. Luncheon, B.C.D.A. Luncheon, B.C. College of Dental Surgeons Luncheon, Boat Cruise and President's Ball.

Enclosed is cheque No. for \$

HOUSING ACCOMMODATION APPLICATION

(To be completed and returned with the above form)

Please reserve the following accommodation
(Order of choice indicated by 1-2-3 in space provided)

	Single	Double	Twin	Suites
Hotel Devonshire		\$10 50-13.50 ☐	\$12.50-15.00 ☐	\$21.00-25 00 ☐
Hotel Georgia	\$10 00-12.00 ☐	\$13.00-13.50 ☐	\$13.50-14.50 ☐	
Hotel Ritz	\$ 8.50-11.00 ☐	\$11.00-15.00 ☐	\$11.00-15.00 ☐	
Hotel Vancouver	\$10 00-15.00 ☐	\$13 00-19.00 ☐	\$13.50-20.00 ☐	\$29.00 up ☐
Bayshore Inn	\$11.00-13.00 ☐	\$14 00-16.00 ☐	\$15.00-17.00 ☐	\$25.00-65.00 ☐
Georgian Towers	\$ 9.00-13.00 ☐	\$13.00-15.00 ☐	\$15.00-17.00 ☐	
Burrard Motel		\$11.00-13 00 ☐	\$13.00 ☐	
Sands Motel	\$ 9.50-10.50 ☐	\$12.50-13.50 ☐		

Travelling by: Car ☐ Train ☐ Bus ☐ Air ☐

Reservations will be made in order of their arrival. Advanced registration will be very much appreciated. A cheque to cover registration must accompany every application. Hotel accommodation can only be guaranteed until May 15 and on receipt of a cheque. Certificates for reduced rail fare will be made available from C.D.A. headquarters.

L'Association Dentaire Canadienne.

JOURNAL

Volume 28

Numéro 3

mars 1962

L'endodontie et ses rapports avec la périodontie

par MARCEL B. ARCHAMBAULT, D.D.S., Montréal, P. Qué.

Le terme "endodontie" comprend tous les procédés utilisés pour le traitement des canaux radiculaires des dents; il fut conçu et adopté par les fondateurs de l'Association américaine des endodontistes et plus particulièrement par le docteur Ostrander, de l'Université de Michigan.

L'ENDODONTIE DU PASSÉ

L'enseignement de l'endodontie, il y a une vingtaine d'années, était assez rudimentaire; il ne comportait aucune technique sérieuse de traitement, d'aseptie et

de scellement des canaux. Heureux était celui qui atteignait l'apex d'une dent! Malgré des échecs nombreux, malgré des tâtonnements interminables, la profession réalisait l'importance de ces traitements.

L'Université de Montréal possédait un appareil à ionisation de fabrication domestique qui servait à aseptiser les canaux, surtout les canalicules dentinaires et les espaces de Ludwig, comme le disait le regretté docteur Thibodeau. Le principe de l'ionisation consistait à dissocier les ions d'iode et à véhiculer ces ions à travers la dentine jusqu'au ciment.

L'iode, malheureusement, avait la propriété de décolorer irrémédiablement la

Conférence prononcée à la séance de janvier 1962 de la Société dentaire de Montréal.

dent. Cette conséquence alertait le public. Et encore, aujourd'hui, les patients demandent si un traitement de canal décolorera leur dent.

L'appareil à ionisation ressemblait à un appareil électro-chocs utilisé en psychiatrie pour le traitement de certaines formes de névroses. Un confrère ami, à cette époque, avait électrocuté une petite patiente, à raison de deux séances par semaine, durant six semaines, et avait terminé son traitement par l'extraction de la dent!

Le psychisme de la patiente s'était alors beaucoup amélioré, mais elle avait quand même perdu sa dent! Ce traitement d'ionisation n'avait pas réussi, parce que ce confrère surveillait à la radiographie la calcification de la lyse osseuse produite à l'apex par l'infection et, à son avis, cette reconstruction de l'os tardait trop à se faire! Une seule séance d'ionisation aurait peut-être suffi à une stérilisation parfaite. Une culture de canal aurait confirmé l'absence de bactéries. Il n'avait qu'à sceller le canal et la nature aurait pris soin du reste!

Le principe de l'ionisation était bon, puisqu'on le retrouve, quelques années plus tard, dans l'ionophorèse. Trop souvent, faute de contact ou parce que la dent n'était pas suffisamment isolée, le courant déviait de son trajet et l'ionisation ne se produisait même pas.

À cette époque, l'application de la digue était quelque chose d'inouï et souvent le patient était malmené, baillonné, privé de respiration et par le nez et par la bouche!

Les instruments consistaient en: six limes, six équarrissoirs et six tire-nerfs. Les médicaments étaient l'eugenol, l'iodoforme, le créosote et le formol: toutes substances irritantes pour la membrane péri-dentaire.

Il n'était pas question d'anesthésie locale pour l'extirpation de la pulpe. L'anesthésie était du domaine exclusif de la chirurgie. L'opérateur avait le choix de trois méthodes: (1) il introduisait d'un geste ferme et brutal le tire-nerf dans le canal jusqu'à l'apex et sortait la pulpe



FIGURE 1

(certains patients s'en sont souvenus jusqu'à l'âge de 90 ans); (2) il pouvait dévitaliser la pulpe à l'aide d'une pâte arsénicale; ce procédé provoquait une pulpite et une périostite aiguës (le patient passait la nuit suivante dans un martyr assés); (3) il anesthésiait directement sous pression la pulpe avec de la cocaïne pure introduite sous un morceau de caoutchouc non vulcanisé pressé avec un bout de bois d'oranger. Le dentiste qui réussissait l'anesthésie en était tout surpris, comme celui qui hypnotise son premier sujet et qui croit rêver! Deux médicaments permettaient au praticien d'empoisonner légalement ses patients: l'arsenic et la cocaïne (deux poisons vifs)!

Durant ce temps, aux Etats-Unis, le docteur Johnson, d'Atlanta, préconisait une méthode excellente qui servit de base à l'endodontie moderne en stimulant l'intérêt et la recherche dans ce domaine. Cette technique était simple. Il extirpait la pulpe et ses débris avec un tire-nerf. Il aplanissait les parois du canal avec des limes appropriées à la grosseur du canal, sans l'agrandir comme on le fait aujourd'hui. Il lavait le canal avec de l'eau distillée ou du peroxyde d'hydrogène. Il asséchait. Puis il déshydratait le canal avec de l'alcool éthylique à 90%. Nouvel as-



FIGURE 2



FIGURE 3

séchement. Il inondait le canal avec du chloroforme. L'alcool a une affinité pour l'eau. Le chloroforme a une affinité pour l'alcool. De sorte qu'il ne restait que du chloroforme. Enfin, il introduisait une pointe de gutta-percha correspondant à la largeur et à la longueur du canal et la comprimait en place avec force. Le chloroforme a la propriété de dissoudre partiellement le gutta-percha et de former du "chloro-percha" qui, à son tour, scellait les canalicules dentinaires et ce qui est plus important — les canaux subsidiaires. C'est sur cette phase que se centrait la valeur de son traitement. Johnson aimait obtenir aussi un petit chapeau en forme de parapluie à l'apex de la dent; ce léger surplus de gutta-percha signifiait que l'apex était obturé hermétiquement (Figure 1).

Au cours de sa dernière apparition devant l'Association américaine des endodontistes, à Chicago, vers 1947, quelque temps avant sa mort, Johnson se plaisait à montrer des centaines de radiographies où apparaissait le fameux petit parapluie et de petits pois attestant la présence de canaux subsidiaires tout le long de la racine et autour de l'apex. Des molaires montraient des abcès situés à la bifurca-

tion de leurs racines; ces abcès provenaient d'un canal subsidiaire conduisant directement dans la chambre pulpaire; ces dents, pourtant, ne montraient pas de raréfaction osseuse à leurs apex.

Ce phénomène ne s'observe que très rarement maintenant que des techniques de traitement plus modernes sont utilisées. C'est dire que les techniques opératoires contemporaines donnent de meilleurs résultats.

L'ENDODONTIE MODERNE

Le docteur Ralph Sommer, de l'Université de Michigan, peut être considéré comme le pionnier de l'endodontie moderne. Il exposa ses idées sur le traitement des canaux aux dentistes de Montréal, pour la première fois, en 1944, au Montreal Dental Club Fall Clinic. Il avait une façon toute personnelle de poser la digue en un tour de main. Il insistait sur la nécessité de prendre des cultures et de sceller un canal d'une façon hermétique avec des pointes d'argent et des tiges de gutta-percha. Le nombre de pointes de gutta-percha qu'il réussissait à insérer dans le canal d'une centrale supérieure, par exemple, était stupéfiant. Sa technique reposait sur la simplicité et la logique. Voici, en quelques mots, la technique du docteur Sommer, qui est considérée de nos jours comme la méthode classique de traiter les canaux.

Ouverture de la chambre pulpaire

Perforation de l'émail à l'aide d'une fraise no 701. L'utilisation d'un tour à haute vitesse accomplit ce travail en quelques secondes, mais présente certains dangers.¹

(a) incisive: le point de trépanation doit être dans l'axe de la dent (Figure 2).

(b) prémolaire: le point de trépanation doit être dans le sens bucco-lingual (Figure 3).

(c) molaire: le point de trépanation doit être dans le sens mésio-buccal, à partir du

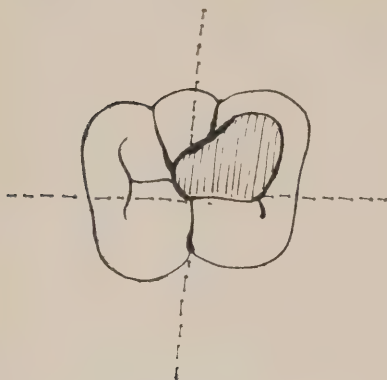


FIGURE 4

centre de la dent au dépens du cuspe mésio-buccal (Figure 4).

Le plancher de la chambre pulpaire doit toujours être laissé intact. L'ouverture est agrandie avec une fraise no 6 pour les incisives et pour les prémolaires; avec une fraise no 10, pour les molaires,

en fraisant de la chambre pulpaire vers l'émail ou l'extérieur de la dent. Il faut que l'ouverture soit égale à la largeur de la chambre pulpaire.

Agrandissement des canaux

La lime no 1 est la lime-clef; cette lime atteint généralement l'apex sans effort, simplement en la poussant légèrement avec le bout de l'index. L'opérateur ressent une résistance quand la lime touche l'apex ou la jonction cémento-dentinaire. Briser cette résistance, c'est souvent dépasser l'apex et envahir un domaine susceptible d'occasionner des complications. L'intervention doit se limiter au canal et c'est pourquoi Sommer recommande de prendre la mesure exacte de la longueur du canal en adaptant un petit morceau de digue de caoutchouc à toutes les limes, quand cette mesure a été vérifiée à la radiographie avec la lime no 1.

Le canal est agrandi en employant successivement, en série, les limes plus grosses; il faut utiliser les limes dans l'ordre de leur diamètre et ne pas espérer abrégier le traitement en omettant un numéro; l'opérateur s'expose à créer un épaulement qui compliquera le travail.

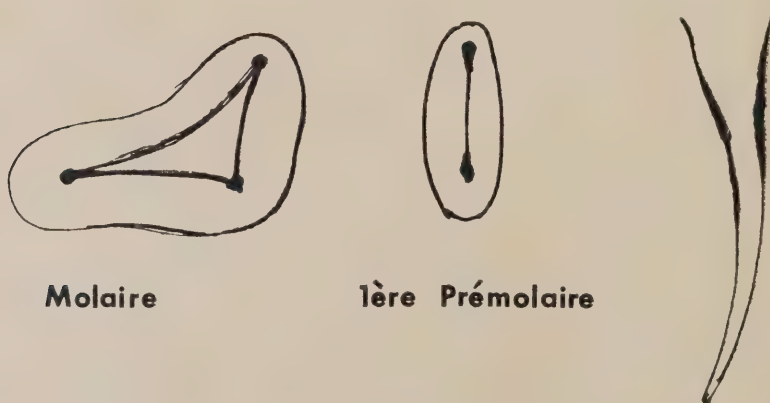


FIGURE 5

Si le dentiste s'éloigne de l'apex parce que sa mesure s'est déplacée, il faut recommencer avec la lime no 1.

Pourquoi agrandir le canal?

(a) un canal n'a jamais une forme régulière: il est plus ou moins aplati ou ovale; il a généralement un étranglement au tiers apical: en l'agrandissant, sa forme s'arrondit; ses parois deviennent lisses et se prêtent mieux aux manipulations nécessaires à un scellement parfait.

(b) l'agrandissement des parois du canal favorise l'élimination de la dentine infectée ou imbibée de toxines ou de bactéries: il en est de même au cours de la préparation d'une cavité pour la dentisterie opératoire; il faut éliminer la dentine ramollie ou affectée par la carie.

Dans les molaires et dans la première

prémolaire supérieure, il est bon de lui donner la forme d'un entonnoir avec une fraise 701 (Figure 5). Cette forme triangulaire facilite l'accès des canaux pour les pointes de papier et les pointes d'argent; l'entrée des canaux se localise plus rapidement, malgré les indications fournies par la position et l'angulation des limes.

Angulation des limes

L'anatomie de chacune des dents et les relations entre leurs couronnes et leurs racines fixent l'angulation qu'il faut imposer aux limes pour que celles-ci puissent, sans créer d'épaulement, ni de faux canaux, élargir le diamètre et polir les parois des canaux radiculaires. L'angulation propre à chaque dent contribue aussi à prévenir la perforation de l'apex (Figures 6, 7).²



FIGURE 6



FIGURE 7

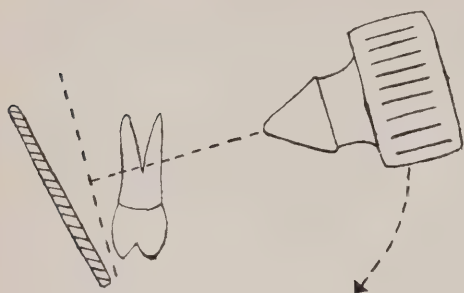


FIGURE 8

Radiographie de la première prémolaire supérieure

Cette dent, à cause de ses deux racines situées sur le même plan sagittal, présente certaines difficultés pour la localisation de ses racines sur une radiographie. Une radiographie prise selon la technique conventionnelle crée une superposition des deux racines où il est impossible de déterminer d'une façon précise la longueur et le diamètre des canaux (Figure 8).

Pour éviter cette superposition et dégager sur le film les deux racines, la technique suivante est à conseiller: (1) film placé en position conventionnelle; (2) tête de l'appareil placée mésialement à la prémolaire, vis-à-vis la canine; (3) le cône n'est pas déplacé. Cette technique nous donne une image montrant les deux racines dégagées, ayant en place les deux limes ou les deux pointes d'argent (Figure 9).

Aseptic du canal

Le parachloromonophénol dans le camphre reste encore le médicament par excellence pour stériliser un canal; il n'est pas irritant pour les tissus.

Le docteur Louis I. Grossman, en 1946, à Chicago, a suggéré l'emploi de la pénicilline pour l'aseptic des canaux; depuis ce temps, la profession a essayé dans ce but tous les antibiotiques de A à Z.²

Aujourd'hui les dentistes n'ont pas délaissé pour autant le paramonochlorophénol; ils y ajoutent les antibiotiques et ce mélange est idéal. Certains patients ont tellement absorbé de pénicilline, d'auréomycine, de streptomycine, etc que des bactéries ont développé une résistance aux antibiotiques et le paramonochlorophénol continue seul à donner des résultats.

La phase la plus importante de l'aseptic des canaux réside dans leur nettoyage mécanique. Il faut éliminer tous les débris pulpaire, surtout à l'apex et laver le canal. Les antiseptiques sont un complément et les cultures fournissent la preuve de la stérilité du canal.

Scellement des canaux

L'obturation des canaux et le scellement des apex s'effectuent généralement soit avec des pointes d'argent ou soit avec des tiges de gutta-percha.

Pointes d'argent. — La pointe doit s'adapter parfaitement aux parois du canal; elle doit être enfoncée avec force, à la limite de sa résistance; elle doit s'y insérer comme une incrustation dans une cavité.

Le ciment Kerr à canaux n'a aucune propriété antiseptique; il scelle les canalicules dentinaires et les canaux subsidiaires en cimentant "in situ" la pointe d'argent; il n'est pas irritant pour les tissus ultra-apicaux et le dentiste ne doit pas s'inquiéter outre mesure si le ciment dépasse légèrement l'apex de la dent.

La pointe d'argent doit obturer le canal jusqu'au milieu de la chambre pulpaire; elle peut être laminée; son extrémité

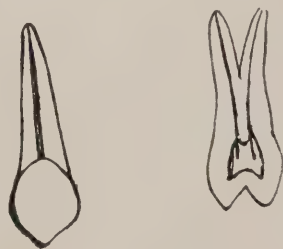


FIGURE 9



FIGURE 10

supérieure est aplatie avec une pince à orthodontie de façon à pouvoir la manipuler facilement avec des précelles pour la retirer au besoin et la remettre en place (Figure 10).

Pointes de gutta-percha.— Les six dents antérieures s'obturent ordinairement avec des tiges de gutta-percha; elles doivent, grâce au ciment *Kerr*, former une masse homogène et compacte. L'apex du canal doit d'abord être scellé; puis le canal est obturé par une condensation latérale exercée avec des fouloirs. On prévient la décoloration de la couronne en enlevant le gutta-percha jusqu'à la jonction énamo-dentinaire de la chambre pulpaire.

L'obturation des canaux avec des pointes de gutta-percha doit être très dense. La plupart des échecs proviennent d'une condensation insuffisante. Une obturation peut sembler compacte, si elle apparaît de face, et très lâche, en vue latérale (Figure 11).

Il est difficile d'atteindre l'apex en utilisant d'autres substances, telles que les ciments, l'oxyde de zinc, etc. Ces matériaux rendent souvent difficile la reprise d'un traitement; il est quasi-impossible de vider les canaux. Les pointes de gutta-

percha, au contraire, s'enlèvent facilement; il suffit de les dissoudre avec un solvant, tel que le chloroforme, l'eucalyptol et de les sortir à l'aide d'équarisseurs. Le gutta-percha facilite de plus la confection d'un pivot.

L'ENDODONTIE CONTEMPORAINE

Vers 1945, le curetage chirurgical des abcès, des granulomes et des kystes jouissait d'une grande faveur. Il était de rigueur d'amputer les apex au niveau de la base de la lyse osseuse pour faciliter le curetage de la région infectée.¹

Le dentiste contemporain pratique encore, il est vrai, quelques apéctomies, mais il est devenu beaucoup plus conservateur.³

On fait davantage confiance aux réactions inflammatoires de l'individu pour l'élimination de l'infection, la cicatrisation et la réparation des cellules osseuses détruites par les bactéries. Le dentiste se contente de traiter la cause de l'infection (située dans le canal) et il laisse agir la nature. En présence de suppuration qui a perforé l'os et qui est logée sous le périoste, le praticien lance cette région et y introduit un drain de digue de caoutchouc en forme de double "t" majuscule; il obture le canal après en avoir contrôlé l'aseptie.

Il existe un équilibre de défense, dans la région apicale, qui fait son apparition aux premières atteintes des bactéries ou de leurs toxines. Il importe de ne pas déranger cette réaction naturelle. On prétend qu'ainsi la guérison et la régénération du tissu osseux sont plus rapides.

L'instrumentation a aussi changé. Les limes et les pointes d'argent Kerr sont délaissées pour des instruments en provenance de Suisse. Ces instruments et ces matériaux sont plus précis. Les pointes, par exemple, correspondent rigoureusement aux limes de numéro identique. Tel n'était pas toujours le cas avec les instruments américains.

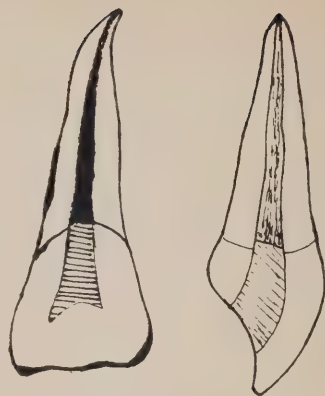


FIGURE 11

OBSERVATIONS

Notre profession a un défaut qui est commun à tous ses membres; elle veut aller vite et, pour ce faire, elle brûle des étapes. Ce n'est pas de la mauvaise foi, ni de la mauvaise volonté, mais une nonchalance inconsciente qui est bien humaine. On redoute l'effort, on manque de patience. En endodontie, comme dans les autres disciplines, on supprime ou on écourte des phases importantes; on veut terminer rapidement et on s'expose à des échecs.

Pourtant, la dentisterie est une profession qui ne peut se permettre de raccourcis! Les dentistes achètent tous les appareils qui leur sont proposés pour diminuer leur travail; ils s'en servent en vitesse, se découragent et les relèguent rapidement aux oubliettes.

L'ionophorèse se base sur d'excellents principes; cette technique est efficace à condition de connaître les principes de base de l'endodontie; on ne peut confier à une machine le travail que doit exécuter le dentiste. La valeur de l'ionophorèse est d'activer la circulation dans la région ultra-apicale et de favoriser et de hâter la guérison. On utilise aujourd'hui l'ultrason en périodontie pour les mêmes raisons.

Les pâtes réputées pour la stérilisation et pour l'obturation des canaux exercent beaucoup d'attrait chez les dentistes; là

encore, ils confient à des médicaments le soin d'exécuter leur travail. Ces pâtes jouent un rôle efficace dans certains cas, mais elles ont aussi un effet néfaste dans d'autres. Ces méthodes ont une vogue durant quelque temps, mais elles sombrent bientôt dans l'oubli.

On cherche sans cesse à s'éloigner des méthodes conventionnelles; on veut épargner du temps et souvent on en perd à réparer des complications produites par des techniques qui n'ont pas subi l'épreuve du temps. On agit comme l'étudiant qui a hâte d'exercer seul dans son cabinet pour ne plus se servir de la digue!

Il vaudrait mieux diriger nos efforts et dépenser notre argent pour améliorer les notions que nous possédons bien.

Toute méthode est bonne, à condition de la maîtriser et d'en obtenir des succès. Il faut connaître ses limites et ne pas entreprendre de cas qui dépassent notre compétence; les cas les plus simples sont parfois assez compliqués! La meilleure façon d'améliorer son rendement, c'est d'étudier la cause de ses insuccès.

Il ne faut pas dire que les cultures sont inutiles, que la digue n'est pas nécessaire, que l'endodontie ne donne pas de bons résultats: critiquer c'est admettre ses faiblesses.



FIGURE 12 Calcification totale de la pulpe de deux incisives centrales. Membrane périodontaire non définie et lamina dura invisible.



a



b

FIGURE 13 Méthode chirurgicale — apicectomie, (a) Granulôme à l'apex de l'incisive latérale. (b) Apicectomie et curetage. (c) Régénérescence du tissu osseux après six mois. (d) Pivôt coulé en or platine cimenté.



c



d

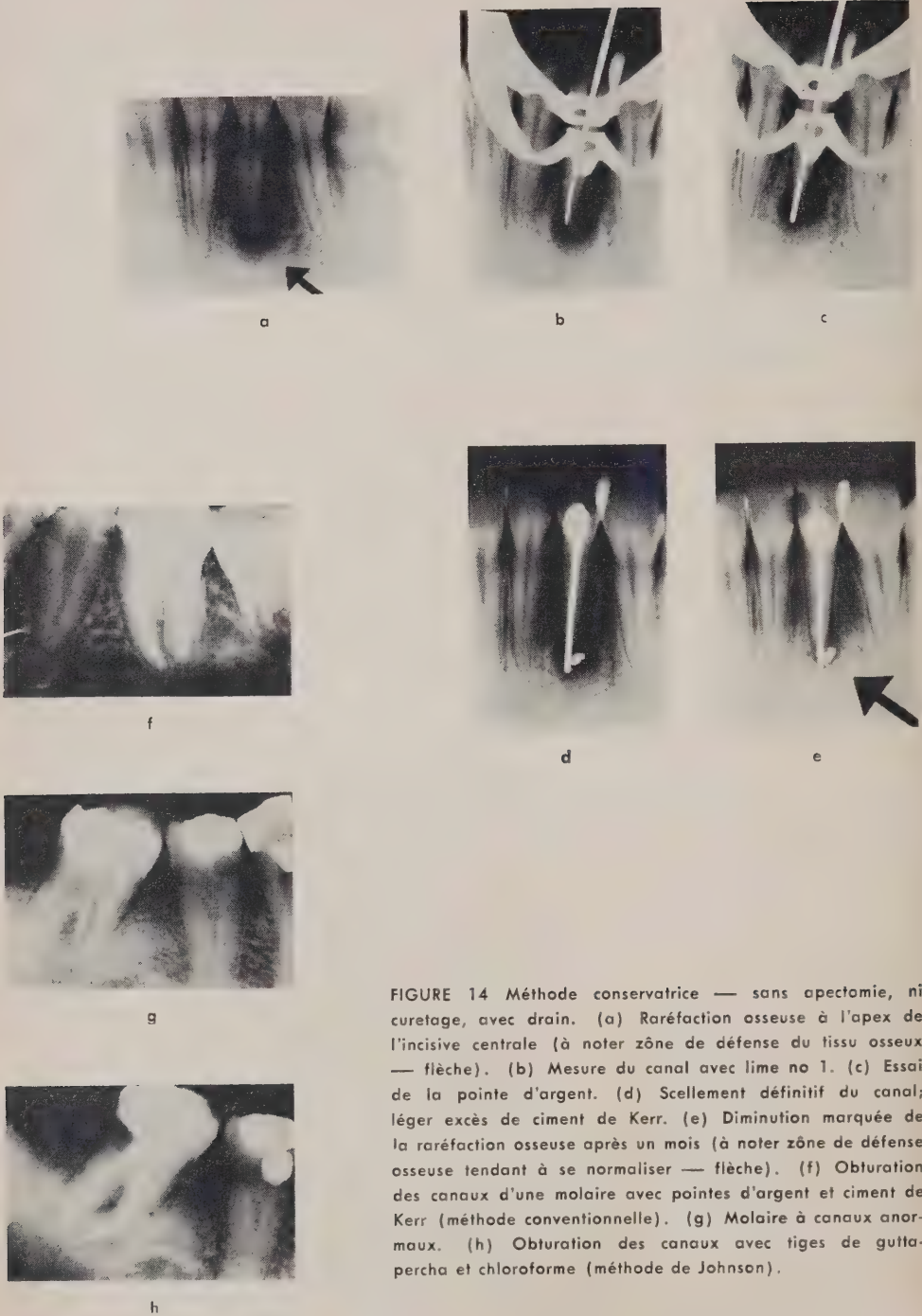


FIGURE 14 Méthode conservatrice — sans apéctomie, ni curetage, avec drain. (a) Raréfaction osseuse à l'apex de l'incisive centrale (à noter zone de défense du tissu osseux — flèche). (b) Mesure du canal avec lime no 1. (c) Essai de la pointe d'argent. (d) Scellement définitif du canal; léger excès de ciment de Kerr. (e) Diminution marquée de la raréfaction osseuse après un mois (à noter zone de défense osseuse tendant à se normaliser — flèche). (f) Obturation des canaux d'une molaire avec pointes d'argent et ciment de Kerr (méthode conventionnelle). (g) Molaire à canaux anormaux. (h) Obturation des canaux avec tiges de gutta-percha et chloroforme (méthode de Johnson).

ENDODONTIE ET PÉRIODONTIE

Une dent lâche indique une pathologie de la membrane périodentaire et du périoste. Ce trouble est toujours accompagné d'une réaction de la pulpe, puisque cette dent réagit généralement aux variations thermiques.

Cette sensibilité détermine le patient à se présenter chez le dentiste; il croit souffrir d'une carie. Sans traitement approprié, le périoste continue à dégénérer et la membrane périodentaire s'atrophie; la pulpe se mortifie peu à peu: c'est la perte prochaine de la dent. Voici dans leurs grandes lignes les relations de la périodontie avec l'endodontie. L'endodontiste prétend qu'un traitement de canal est contraindiqué dans une dent dont la membrane périodentaire est détruite dans ses deux tiers. Le même principe s'applique en périodontie.⁴

La membrane périodentaire peut se détruire de deux façons, par une raréfaction osseuse à l'apex ou par une lyse osseuse au collet de la dent. Elle peut donc être détruite par ses deux extrémités à la fois. Des patients sont référés parfois à l'endodontiste pour des abcès aigus ou des fistules au tiers apical causés par une pathologie périostéale. La pulpe de ces dents réagit au vitalomètre; la radiographie montre une zone saine à l'apex, mais un clapier profond le long de la racine.

Le périodontiste ne s'intéresse qu'à la membrane périodentaire et au périoste; par ailleurs, l'endodontiste se préoccupe uniquement de la pulpe et des manifestations péri-apicales. Ces attitudes de cloisonnement desservent mal les malades. Il est impossible d'exercer l'endodontie sans posséder des notions précises de périodontie; de même, le périodontiste se doit de connaître les comportements de la pulpe. On ne peut fragmenter une science; il y a des chevauchements nécessaires. Un endodontiste ne peut traiter une pulpe pathologique ou une infection à l'apex d'une dent, tout en négligeant la gencive ou la membrane périodentaire qui peuvent occasionner la perte de cette même dent.

Comment expliquer l'hypercémentose de la racine?

C'est un désordre des cellules cémentoblastes provoqué par une pathologie périostéale se manifestant par une prolifération des cellules du ciment.

La cause de l'hypercémentose est lointaine. Elle se produit surtout dans les 1^{ères} et 2^{èmes} prémolaires inférieures et chez des sujets qui ont une densité osseuse très prononcée; elle est due à un traumatisme prolongé, mais minime, exercé sur la dent. Les réactions de la pulpe de ces dents sont remarquables. La dentine secondaire est abondante. Les abcès à l'apex de ces dents sont extrêmement rares; il est quasi-impossible de rejoindre ces apex par le canal.

Ces hypercémentoses s'apparentent aux calcifications totales de la chambre pulpaire de certaines incisives centrales supérieures.⁶ Ces calcifications sont des manifestations d'une hyperactivité des cellules odontoblastes à la suite d'un traumatisme subi au cours du jeune âge; elles se rencontrent au cours de certains traitements d'orthodontie. La membrane périodentaire de ces dents montre aussi une réaction à ce traumatisme: sa vitalité est diminuée, elle s'est partiellement calcifiée et le déplacement ou l'extraction de ces dents devient une opération difficile; ces réactions inflammatoires intéressent l'endodontiste aussi bien que le périodontiste.

Les forces de défense de l'organisme sont toujours présentes et le dentiste doit composer avec elles. En endodontie, on a abandonné le curettage apical; on traite la cause et on laisse la nature réparer les effets. En périodontie, on délaisse la gingivectomie: on corrige les causes et l'organisme guérit les effets.

Le docteur Abraham Goldstein, président de l'American Academy of Dental Medicine, présentait, récemment, à Montréal, au cours de sa visite annuelle à notre section, un rapport de cas extraordinaire. Il s'agissait de quatre incisives inférieures lâches au point où elles auraient pu être extraites avec les doigts. Le patient faisait 102° de température. Le docteur Goldstein

stabilisa ces dents au moyen de stent pour les meuler jusqu'à ce qu'elles n'aient plus de contact avec les dents antagonistes. La radiographie montrait une lyse totale de l'os alvéolaire. A la suite des traitements appropriés, l'os s'est régénéré complètement, les membranes périodentaires et les lamina dura sont réapparues et les dents ont repris leur solidité normale.

Ce que le docteur Goldstein n'a pas dit, c'est que, pour que la membrane périodentaire se reforme, il fallait nécessairement que les pulpes de ces quatre dents soient encore vivantes!

Il appartient au dentiste de prévenir, dès le début, les désordres d'origines endodontique et périodontique. Des gencives molles et sanguinolentes montrent des signes précurseurs d'un affaissement de l'os alvéolaire; trouvons la ou les causes, corrigeons tout de suite les déséquilibres de l'articulation; prévenons les infiltrations de nourriture entre les dents; les cure-dents n'ont aucune raison d'exister.

SUMMARY

There has been considerable progress in endodontic practice during the past twenty years. About 1940, Johnson, of Atlanta, for the first time outlined a specific technique for endodontic therapy; a few years later, Sommer described a technique that became a classic and that is still used today.

The author describes this technique in detail, stressing mechanical cleansing of the root canal as the most important procedure in endodontic therapy. Antiseptic and antibiotic therapy are considered to be only therapeutic aids.

The dentist who renders endodontic treatment must take into consideration the periodontal tissues, since pathological involvement of the periodontal membrane frequently has a bearing on the dental pulp. The dentist who undertakes periodontal treatment must likewise take into consideration the dental pulp because infection of the pulp tissue has a relationship to the periodontal membrane.

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La première femme dentiste • Emma Gaudreau (Mme H.-Edmond Casgrain), épouse, sœur, tante de dentistes, fut licenciée par le Collège des chirurgiens dentistes de la province de Québec le 8 avril 1898 et mourut à Québec où elle avait exercé sa profession, le 7 octobre 1934, âgée de 73 ans.

IN MEMORIAM



Le docteur Denis Forest.

La profession dentaire de la province de Québec a perdu, en la personne du docteur Denis Forest, l'un de ses membres les plus éminents.

Né à St-Sulpice, en 1894, ancien élève de l'Ecole Normale, il termina ses études dentaires en 1917, à l'Ecole Dentaire Laval, plus tard faculté de chirurgie dentaire de l'Université de Montréal.

Nommé registraire du Collège des Chirurgiens-Dentistes de la province de Québec, vers 1922, il prit une part active à la refonte de la loi dentaire de 1925, qui conférait au groupement des dentistes de l'époque un caractère professionnel.

Cette refonte de 1925, malgré l'opposition de certains députés et de certains conseillers législatifs, reléguait dans le passé l'aspect technique de la dentisterie pour l'intégrer officiellement au nombre des disciplines dites libérales.

Il eut, au cours de sa carrière de registraire, à combattre, de concert avec ses collègues du Collège, la publicité commerciale de certains "salons dentaires" qui versaient dans le mercantilisme au dépens des services rendus à la population.

Il réussit, à la suite de poursuites légales, longues et coûteuses, à abolir cette annonce tapageuse qui s'étalait à pleines pages dans les journaux et sur des enseignes électriques.

La loi dentaire, durant les longues années

durant lesquelles il fut registraire, subit plusieurs amendements importants à la Législature, mais elle devenait, chaque fois, plus forte et plus claire.

Sa fonction l'obligeait à traduire devant les tribunaux ou le conseil de discipline les techniciens marrons ou les dentistes délinquants; cette fonction, le docteur Forest l'a toujours remplie avec justice, clarté et équité.

Les aviseurs légaux du Collège, les juges et les législateurs lui ont toujours reconnu un sens légal très averti et il a toujours guidé judicieusement les avocats chargés des intérêts du Collège devant les cours ou le Parlement.

Il a bien servi le Collège durant de longues années pour un salaire très modeste et ce n'est que quelques années avant sa retraite qu'il avait des honoraires raisonnables.

Il est décédé subitement à l'âge de 67 ans, laissant le souvenir d'un esprit allègre, d'une probité indiscutable.

Son existence professionnelle fut toute animée d'intégrité et d'amour pour sa profession.

Ceux qui l'ont connu regrettent la perte d'un ami sincère qui s'est dévoué sans compter pour sa profession; les plus jeunes peuvent glaner des exemples de probité professionnelle dans ses attitudes exemptes de toute compromission.

Armand Fortier

LES ACTUALITES DENTAIRES

Le Corps dentaire royal canadien

LE BRIGADIER BAIRD SE REND A CAMP BORDEN

Le brigadier K. M. Baird, directeur général des Services dentaires pour les forces armées du Canada, a assisté à une réunion du bureau de rédaction de la revue *Oral Health* tenue à Toronto, le 24 janvier, puis il s'est rendu à l'Ecole du Corps dentaire de Camp Borden pour y inspecter le personnel et les installations, les 25 et 26 janvier.

CONFERENCE ANNUELLE DU CORPS DENTAIRE TENUE EN DECEMBRE A OTTAWA

Les commandants des unités dentaires de l'Armée régulière au Canada se sont réunis à Ottawa pour y assister à une conférence qui a duré du 4 au 6 décembre. Cette conférence était sous la direction du brigadier K. M. Baird, directeur général des Services dentaires, et la présidence du colonel G. B. Shillington, sous-directeur général des Services dentaires. Un certain nombre d'officiers de la Direction ont présenté des travaux et les discussions ont porté sur des sujets ayant trait au fonctionnement du Corps dentaire.

Il y a eu, entre autres réunions, un dîner de mess mixte qui a eu lieu au mess des officiers du Quartier-général de l'Aviation, le 5 décembre. En plus des officiers qui assistaient à la conférence, on remarquait un grand nombre d'officiers dentistes de l'Armée régulière et de la Milice, d'Ottawa et de la région avoisinante, qui étaient accompagnés de leurs épouses.

Voici le nom des officiers commandants qui assistaient à cette conférence: Colonel B. P. Kearney — 11^e Compagnie dentaire, Edmonton; Colonel C. E. Purdy — Commandant, Ecole du Corps dentaire; Colonel A. C. Leman — 13^e Compagnie dentaire, Trenton; Colonel S. T. Roger — 12^e Compagnie dentaire, Hali-

fax; Lieut.-col. R. B. Jackson — 14^e Compagnie dentaire, Winnipeg et Lieut.-col. J. G. Butler — 15^e Compagnie dentaire, Montréal.

LE LT.-COL. W. R. CUNNINGHAM PREND SA RETRAITE

Le Quartier-général de l'Armée a annoncé que le lieutenant-colonel Winston R. Cunningham, principal clinicien au Stadacona, à Halifax, a pris sa retraite.

Né à Elgin (Manitoba), le lieutenant-colonel Cunningham a commencé ses études à Souris et il a obtenu son doctorat en chirurgie dentaire à l'Université de Toronto, en 1934. Il est marié et père d'une fille.

Après avoir obtenu son brevet d'officier au grade de lieutenant dans le Corps dentaire en 1939, il a servi au Canada dans les 10^e et 5^e Compagnies dentaires jusqu'en octobre 1941, alors qu'il a été promu capitaine et envoyé à Hong-Kong avec le quartier général du Groupe "C". Il a été fait prisonnier par les Japonais, en décembre 1941, mais il a continué d'exercer ses fonctions en s'occupant des prisonniers de guerre canadiens. Il a été promu major, en février 1944, et il est revenu au Canada, en octobre 1945, où il a servi dans les 21^e, 22^e, 13^e et 11^e Compagnies dentaires jusqu'au mois de décembre 1951, alors qu'il a été affecté à la Direction des services dentaires au Quartier-général de l'Armée. Promu lieutenant-colonel en 1953, il a été envoyé en France en qualité de commandant de la 35^e Unité dentaire de campagne. A son retour au Canada en 1955, il a été nommé clinicien principal à Camp Borden et, en juillet 1959, on lui a confié le poste qu'il occupait au moment de sa retraite.

PROMOTION DU MAJ. WINDSOR ET DU CAPT. BRYANT

Le Quartier-général de l'Armée a annoncé la promotion du major G. E. Windsor, au grade de lieutenant-colonel, et celle du capitaine R. J. Bryant, à celui de major.

Le lieutenant-colonel Windsor est originaire de Kamsack (Sask.). Après avoir obtenu son immatriculation supérieure en 1940, il a fréquenté l'Université d'Alberta et l'Université de Saskatchewan, où il a reçu son B.A. en 1943. Il s'est enrôlé dans l'Aviation, la même année, et est devenu navigateur. Après sa démobilisation, il a repris ses études et il a obtenu son doctorat en chirurgie dentaire à l'Université d'Alberta, en 1949. Devenu capitaine dans l'Armée, il a été affecté à la Région militaire de l'Ouest. Depuis lors, il a été affecté à des unités dentaires en France et en Allemagne, et, depuis août 1961, il occupe le poste d'officier dentiste principal à London (Ont.). Le lieutenant-colonel Windsor est marié et père de deux filles.

Le major Bryant est né à Dauphin (Man.), où il a commencé ses études. En 1939, il terminait son cours secondaire à Lindsay (Ont.); après s'être enrôlé au Corps dentaire la même année, il a fait du service outre-mer de 1941 à 1945. Le major Bryant a fait son cours de dentiste à l'Université de Toronto, où il a reçu son diplôme en 1952. Il a ensuite servi dans le Corps dentaire en Ontario, au Manitoba et outre-mer avec la 35^e Unité dentaire de campagne. Il se trouve actuellement stationné à la base aérienne de l'ARC à Portage-la-Prairie, où il demeure avec sa femme et ses trois enfants.

UN OFFICIER DENTISTE DE L'ARMEE AMERICAINE SUIVIT UN COURS A L'ECOLE DU CORPS DENTAIRE

Le major George Kuttas, du Corps dentaire de l'Armée américaine, de Fort Ord (Californie), a suivi, du 15 janvier au 16 février, le cours sur le soin des blessés et les soins cliniques, donné à l'Ecole du Corps dentaire à l'intention des officiers.

DES OFFICIERS DENTISTES SUIVENT DES COURS

Les officiers dentistes dont les noms apparaissent ci-après ont suivi dernièrement des cours au Canada ou aux Etats-Unis:

— A l'Université du Michigan, le lieutenant-colonel O. W. Crummey, un cours de chirurgie buccale.

— A la base de l'Aviation américaine de Colorado-Springs, le major J.-A. Lauzière, un cours de chirurgie buccale.

— A la U.S. Navy Dental School de Bethesda (Maryland), le major W. H. Carter, un cours sur les maladies périodontiques; le major J. M. Donely, un cours sur les couronnes et ponts; les majors T.-C. Gaudet et A. L. Welland, un cours de prothèse partielle; le major I. W. Susser, un cours de chirurgie buccale.

— Au Centre d'instruction du Service de santé des forces armées du Canada, à Camp Borden, le major J. I. Gordon et les capitaines J. T. Marshall et C. G. Travis, le cours sur la guerre nucléaire, bactériologique et chimique à l'intention des médecins et des dentistes militaires.

— A l'Ecole du Corps dentaire de Camp Borden, le lieutenant-colonel G. E. Windsor, les majors R. E. Dyer, E. D. Fraser, J. M. Smith, C. G. B. Grant, J. G. Andrews, L. R. Pierce et L. A. Richardson, le cours portant sur le soin des blessés et les soins cliniques, donné à l'intention des officiers. Les majors M. J. Albinati et G. L. Locke de la Milice (Corps dentaire) ont suivi le cours sur le soin des blessés.

LE LT.-COL. HILLIER ASSISTE A UNE REUNION DE L'ASSOCIATION DENTAIRE CANADIENNE

Le lieutenant-colonel D. H. Hillier, qui fait partie de la Direction des services dentaires, a représenté le directeur général à une réunion du conseil d'hygiène dentaire publique de l'Association dentaire du Canada, qui s'est réunie à Toronto pour y étudier, les 24 et 25 janvier, des questions portant sur l'hygiène publique.

LE MAJ. PROTHEROE PRESENTE DES TRAVAUX

Les 1^{er} et 2 février, le major D. H. Protheroe, qui est affecté à la Direction des services dentaires, a prononcé six causeries sur la direction des cliniques devant les officiers qui suivaient le cours clinique à l'Ecole du Corps dentaire.



Un totem magnifique à la pointe Prospect du Parc Stanley — un des points de vue les plus beaux du parc.



Ford — G.V.T.A.

Le soixante-et-unième congrès de l'Association dentaire canadienne aura lieu conjointement avec le quarante-sixième congrès de l'Association dentaire de la Colombie-britannique dans une ville réputée pour être située dans le plus beau décor naturel du monde!

La ville de Vancouver a des milles de plages superbes; elle est entourée de montagnes majestueuses; elle a des jardins merveilleux et des hôtels splendides. Le congrès présentera, dans cette splendeur naturelle, un programme scientifique où tous les aspects de la dentisterie seront exposés dans leur formule la plus moderne!

Les cliniques et les conférences auront lieu dans le nouveau théâtre Reine Elizabeth, qui vient d'être construit spécialement pour abriter des congrès de ce genre! Vous reviendrez de ce congrès avec des souvenirs inoubliables!

L'ASSOCIATION DENTAIRE CANADIENNE
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The Fédération Dentaire Internationale

G. H. LEATHERMAN,* D.M.D., F.D.S., R.C.S., London, England

In the following article Dr. Leatherman describes the organization, function and purposes of the Fédération Dentaire Internationale. The national dental organizations of some fifty countries, of which the Canadian Dental Association is one, each make an annual per capita grant to the Federation. These grants support the necessary administrative machinery. But the wheels of the Federation really turn with the money received from individual supporting members.

The number of supporting members varies greatly from country to country. Finland for many years has headed the list with 20 per cent of the dentists of Finland being supporting members. A little more than 1 per cent of Canadian dentists are supporting members.

The need for an international organization for dentistry is adequately pointed out by Dr. Leatherman. Supporting membership gives the individual dentist an opportunity to support his profession on the international level. An illustrated booklet about the Fédération Dentaire Internationale is available on request to Canadian Dental Association headquarters. Supporting membership is available to all members of the Canadian Dental Association at the rate of \$15 a year. Applications should be sent to the National Treasurer for Canada, Don W. Gullett, 234 St. George Street, Toronto 5, Ontario.

D.W.G.

*Secretary General, Fédération Dentaire Internationale.

As Secretary General of the *Fédération Dentaire Internationale*, the writer is frequently asked "For what purpose does the F.D.I., an international dental organization, exist? What does this organization do for dentistry and dental practitioners? Why should every dentist lend his support to this organization?" The following article is written in an attempt to answer these questions.

EARLY HISTORY AND ORIGIN

Interest in international co-operation was already stirring amongst dentists in different parts of the world as far back as the 1880s. On the occasion of the World Exhibition held in Paris in 1889, our French colleagues organized the first international dental congress. From this we may assume that even at that time there existed a desire to bring together colleagues from different countries in order to exchange ideas, report on new experiments and discuss their results, in short, to assist the development of dentistry on an international basis.

The Paris congress was soon followed by a second international congress, this time organized by the National Dental Association of the United States. It was held in Chicago in connection with the World Exhibition of 1893.

When another World Exhibition was to take place in Paris in the year 1900, our French colleagues once more undertook the task of organizing an international congress. It should be noted that between these congresses no international organization existed and the dentists of the host country were responsible for all the arrangements. However, far-sighted French colleagues, led by Charles Godon, rector of the *Ecole Dentaire* in Paris, realized that it would be very advantageous if a permanent organization were created to maintain a certain continuity between future congresses. The organizing experience gained at an earlier congress might thus be put to good use when arranging future congresses. The last day of the

Paris congress, August 14, 1900, saw the foundation of the *Fédération Dentaire Internationale*.

Anyone who studies the activities of the *Fédération Dentaire Internationale* during the last sixty years will realize that the ideas of those French colleagues were well founded and destined to bear rich fruit in the years to come. Indeed, the *Fédération Dentaire Internationale* is the only international health organization, apart from the International Red Cross, which has had the vitality to survive two world wars.

AIMS AND PURPOSES

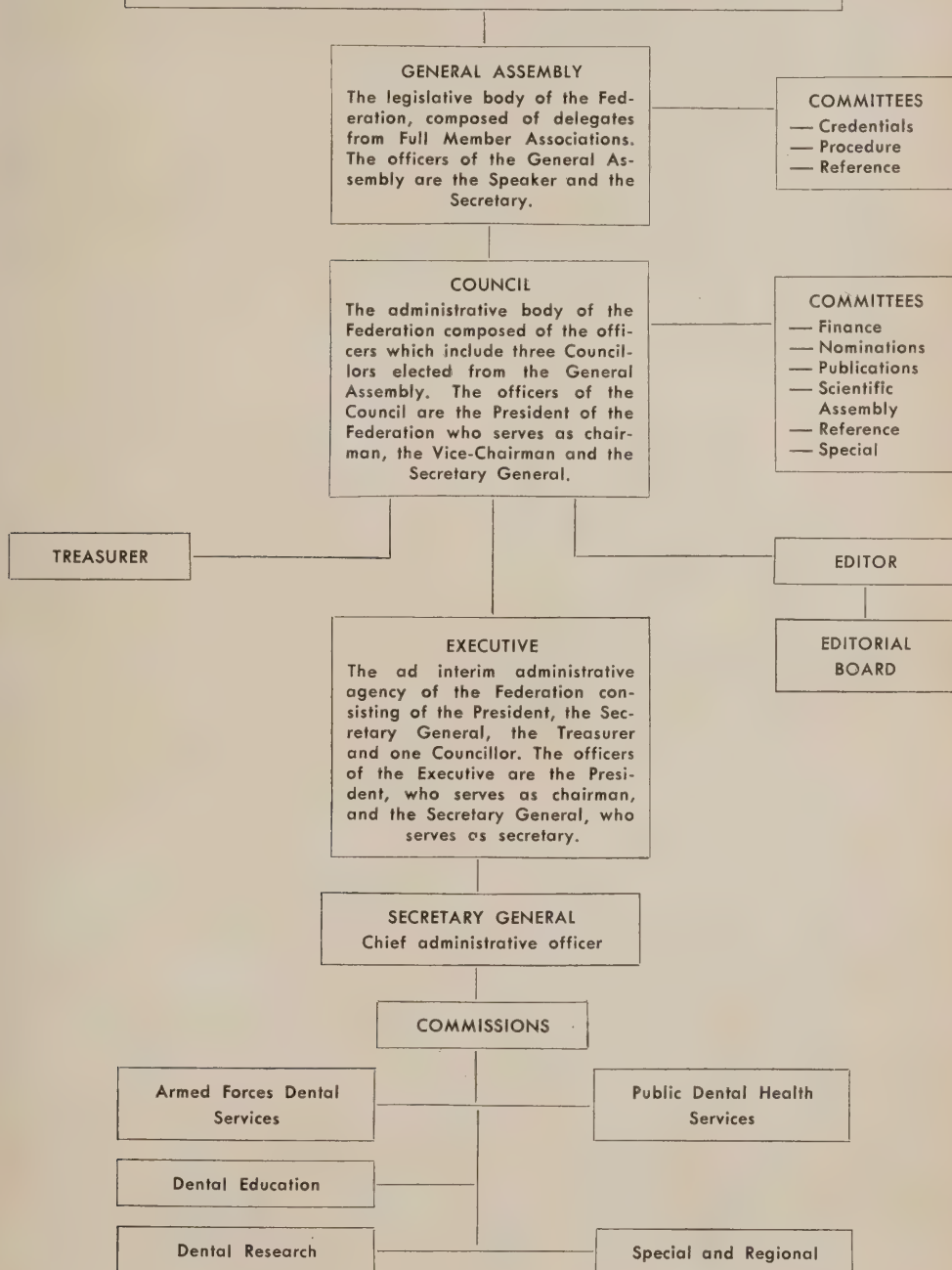
The main purpose of the Federation is, to quote its constitution, "to establish and encourage international dental programs which will advance the science and art of dentistry and the status of the profession of dentistry in the interest of improved dental and general health for all peoples". The leaders of the *Fédération Dentaire Internationale* have always striven to adapt the Federation's activities to the varying requirements conditioned by developments in dentistry.

HEADQUARTERS OFFICE

The daily administrative work of the Federation is carried out at the headquarters office at 35 Devonshire Place, London, W.1, United Kingdom, by a staff of six, under the direction of the Secretary General. Other work carried out by the secretariat includes the co-ordination of and assistance with the work of the F.D.I. commissions, keeping up to date lists of addresses of national dental associations, dental schools and dental journals and the preparation of surveys on important questions and the quarterly *News Letter*. Whilst general correspondence is conducted in English, French, German and Spanish, the documents for the Federation's annual sessions are distributed in English and French.

FEDERATION DENTAIRE INTERNATIONALE

A voluntary, international federation of national dental societies with individual supporting members. The officers of the Federation are: the President, five Vice-Presidents, the Secretary General, the Treasurer, the Editor, the Speaker of the General Assembly and three Councillors.



SCIENTIFIC ACTIVITY

Scientific lectures in different fields of dentistry are regularly given at the annual sessions of the *Fédération Dentaire Internationale* and the scientific program at the world congresses, convened every five years, is on such a scale that it assumes the character of a grand exposé of all developments in the field of dentistry up to the time of the congress. The high standard of the program is set by the world's most eminent dentists who are always present on these occasions. At the annual sessions and, of course, above all at the big congresses, the private practitioner, as well as the public



Jean Delibéros (Paris, France), president of the *Fédération Dentaire Internationale*.

health dentist, teacher and scientist, has extraordinary opportunities of widening his knowledge, making new personal contacts and establishing valuable relationships with those who are interested in the same problems. On returning home, he is able to view the various aspects of dentistry in a new light and is filled with renewed enthusiasm for the tasks he has made his own. The XIIth International Dental Congress in Rome in 1957 was attended by 7,000 dentists from 72 countries and it is hoped that at the XIIIth International Dental Congress which is to take place in Cologne from July 7-14, 1962, there will be an even larger attendance.

The following cities have been selected as the venues of the next few annual sessions: Stockholm in 1963, San Fran-

cisco in 1964 and Vienna in 1965. It is the earnest hope of the members of the *Fédération Dentaire Internationale* that a meeting will be planned in Canada.

SOCIAL AND ECONOMIC PROBLEMS

The increasingly complex social and economic problems which nowadays affect the world of dentistry are thoroughly discussed at both the annual sessions and quinquennial congresses of the *Fédération Dentaire Internationale*. Thanks to the development of the *Fédération Dentaire Internationale* and the position it has attained today, the organization has extraordinary possibilities in this field. Sixty national dental organizations from 49 countries and representing approximately 240,000 dentists are now affiliated to the Federation. They have the right to send delegations to the General Assembly which is the supreme legislative and governing body of the Federation and hence of the dental profession. Because the *Fédération Dentaire Internationale* secretariat is in direct contact with all these national dental organizations, it is possible to procure through direct channels information on all kinds of topical questions pertaining to the profession from almost every part of the world. After the material collected has been processed by the Federation's commissions or, in some cases, by the secretariat, extremely valuable surveys can be presented. As instances one could mention the surveys of the position regarding fluoridation in different parts of the world (an investigation carried out by the secretariat in 1959), the dentist-population ratio in different countries, the organization of military dental services and the training and status of all categories of auxiliary dental personnel.

PUBLICATIONS

The official publication of the *Fédération Dentaire Internationale* is the *International Dental Journal*, which appears four times a year. Its articles are primar-

A partial view of the F.D.I. General Assembly in Helsinki, Finland in 1961, showing Don W. Gullett of the Canadian delegation.



ily scientific in character but also cover social and other questions. Here too one can study the proceedings of the F.D.I. meetings. The main language is English but, in keeping with the international nature of the Journal, every article is followed by summaries in French, German, Italian and Spanish. The reports on the Federation's activities are published in English and French. The high standard of the Journal and its contents are guarded by an editorial board and a publications committee, whose members are leading men from the dental world of Europe and America.

The *News Letter*, issued from the secretariat and published four times a year, contains interesting news about dentistry in all parts of the world. This publication also contains preliminary programs for the Federation's annual sessions and quinquennial world congresses, as well as brief reports on Federation meetings and activities. The *News Letter* is published in English, French, German and Spanish. A complimentary sample copy may be obtained from Don W. Gullett, secretary of the Canadian Dental Association, who is also the F.D.I. National Treasurer in Canada.

F.D.I. COMMISSIONS

The work of the Federation is to a large extent divided amongst different commissions whose members are experts from all over the world and are elected by the delegates to the General Assembly. Each commission is composed of five members and a number of advisers. In the commissions, various projects are given expert consideration; reports are produced and resolutions drafted. These reports are then presented to the General Assembly of the Federation for appropriate action.

There are four standing commissions:

Armed Forces Dental Services (chairman, Brigadier-General T. P. Fox, U.S.A.).—This commission studies such problems as the standardization of military dental equipment and dental records, the organization of military dental care and aerodontalgia. It organizes a highly successful military conference within the framework of the Federation's annual session or quinquennial congress. Last year in Helsinki, the military conference was attended by forty officers from sixteen countries. The theme selected for the military conference at the 1962 Cologne



Don W. Gullett of the Canadian delegation is identified by the white arrow at a meeting of the F.D.I. Council in Helsinki, 1961.

Congress is "The training of the young dental officer". The commission exchanges representatives with the Odontological Section of the International Committee for Military Medicine and Pharmacy.

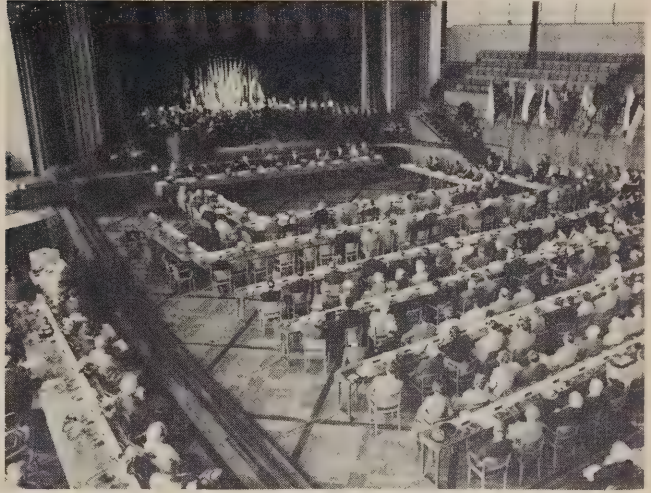
Dental Education (chairman, P. O. Peder-sen, Denmark). — This commission recently prepared a survey on the question of the exchange of dental teachers and students between the teaching institutions in various countries. It has also been working on the harmonization of dental curricula and diplomas in the countries of the European Common Market. At the quinquennial congresses a meeting of the deans of dental schools is organized. The commission is now working on the preparation of dental lexicons in English, French, German, Italian and Spanish which will be of great assistance to interpreters and translators in the dental field. This latter task is being supported by a generous grant from the United States Public Health Service.

Dental Research was a memorandum on periodontal disease which was used as background material for the Expert Committee on Dental Health (Periodontal Disease) convened by the World Health Organization in August 1960. The commission also has two very active subcommittees. The Subcommittee on the Standardization of Dental Materials, under the chairmanship of G. C. Paffenbarger, U.S.A., has produced specifications for alloy for dental amalgam, dental mercury, denture base polymer, dental inlay casting wax and dental silicate cement. The subcommittee is currently engaged on the preparation of a specification for zinc phosphate cement. The Subcommittee on Dental History (chairman, L. J. Cecconi, France) issues a bulletin to which is appended a bibliographical index listing as far as possible all historical publications as and when they appear. This comparatively new subcommittee holds open meetings at the Federation's annual sessions and quinquennial congresses at which papers are presented by leading dental historians.

Dental Research (chairman, S. Kresh-over, U.S.A.). — Amongst the tasks recently completed by the Commission on

Public Dental Health Services (chairman, H. Freihofer, Switzerland).—This commission is at present striving to produce

Opening ceremonies at the 1956 annual session in Zürich, Switzerland.



an international program for dental public health services. It has drawn up a standard nomenclature for auxiliary personnel in English, French and German and a policy statement on dental assistants which were adopted by the General Assembly of the Federation at its meeting in Helsinki last July. At the New York session in 1959 a subcommittee, under the chairmanship of Don W. Gullett, secretary of the Canadian Dental Association, was set up to deal with questions relating to dental technicians on a world-wide basis. This subcommittee undertook an inquiry into the situation regarding dental technicians in the member countries of the Fédération Dentaire Internationale, produced a policy statement on dental technicians which was accepted by the General Assembly at its meeting in Dublin in 1960 and conducted an investigation into the training of dental technicians the results of which are now being circulated to the member associations of the Federation. As the subcommittee had already completed the task which it had been asked to carry out thanks to the fine efforts of Dr. Gullett, it was dissolved at the Helsinki session.

The chairman of the Commission on Public Dental Health Services is also the technical director of the International Office for Dental Health Information which is established in Zürich. This office maintains archives for dental health information material which it supplies free of charge to F.D.I. member associations, universities and health authorities. It also develops new information material and prepares, on request, information campaigns. At the Cologne Congress next July the Commission on Public Dental Health Services is holding an open meeting on the various aspects of dental health education and arranging a small exhibition of promotion material to supplement the reports presented.

In addition to these four standing commissions, the Federation also has two special commissions.

Special Commission on Oral and Dental Statistics (chairman, L. J. Baume, Switzerland). — This special commission is working on the indexing of caries, periodontal diseases and handicapping anomalies. At the annual session in Helsinki last year, the General Assembly adopted



Wolff & Tritschler

Cologne, venue of the 1962 world dental congress.

the first three chapters on classification, terminology and description of study of the "General Principles concerning the International Standardization of Dental Caries Statistics." The remaining four chapters of the Principles will cover directives for collecting and recording data, proper sampling procedures, evaluation of data using proper indices and the reporting of results and their presentation in proper terms. The special commission also collaborated with the Expert Committee on Standardization of Reporting Dental Diseases and Conditions of the World Health Organization, which took place recently in Geneva.

Special Commission on the Dentist's Health (chairman, J. Charon, France).—This special commission was set up in 1959 to study the occupational health hazards of dentists, the relationship of health hazards to the income of dentists,

with particular attention to the age factor, and matters relating to the position of the dentist in society as a whole. The special commission is at present completing its collection of data on mortality and contagious diseases, psychosomatic diseases, circulatory troubles and allergies, deformities brought about by the bad posture of practitioners as a result of working methods and different types of equipment, hours of work of practitioners in various countries and the increase in population and dental treatment related to the number of practitioners in the world. In its long-term program the commission is planning to study the limitation of hours at the chairside whilst maintaining the standard of living of the dentist and the functional adaptation of dental equipment, working on the principle that "improvement in the physical and mental balance of practitioners=improvement in the quality of treatment given to patients".

As the Federation has a limited budget it is unfortunately not possible at the moment for these international commissions to hold meetings during the period between the annual sessions. Therefore, much of the work of the commissions has to be carried on by correspondence.

Alongside these standing and special commissions, a Regional Commission for Europe studies problems common to a number of European countries such as school and youth dental services, undergraduate and postgraduate training, public health programs and standards for auxiliary personnel. In addition, it watches developments with regard to the European Common Market.

The problem of regional organization is at present occupying the attention of the Federation, especially in relation to the Americas and the Western Pacific. It is becoming increasingly evident that priority must be given to some form of regional dental planning within the *Fédération Dentaire Internationale* which would enable the dental organizations

with common regional problems to strengthen their contacts.

CONTACTS WITH INTERNATIONAL ORGANIZATIONS

The *Fédération Dentaire Internationale* is affiliated to a number of international organizations. Firstly, there is the World Health Organization (W.H.O.). The valuable contributions of this organization in public health in different parts of the world are well known. From the very beginning of its affiliation with the World Health Organization the Federation has successfully endeavoured to persuade the World Health Organization to include a dental health program within its general program. In 1955 a major step towards the realization of this aim was the appointment of J. W. Knutson of the United States as Dental Health Officer at the W.H.O. headquarters in Geneva for a period of six months. He and his successor, C. L. Sebelius of the United States travelled widely giving advice and assessing the dental needs of countries and regions where the help of W.H.O. was most urgently required. F. B. Rice of New Zealand has succeeded them and is amplifying and implementing their proposals. The *Fédération Dentaire Internationale* continues to give all possible support to the World Health Organization's work for dental health which now includes the award of fellowships, the provision of dental consultants and the organization of expert committees, study groups and seminars. Two highly successful dental health seminars were held in New Zealand in 1954 and Australia in 1959. A seminar on dental health services for children was held in Sweden in 1960. Expert committees have covered such topics as water fluoridation, auxiliary personnel and periodontal diseases. Briefly, the Federation is one of the non-governmental organizations in official relations with the World Health Organization and acts as the spokesman of the world dental profession in this organization.

The Federation is also a member of

the Council for International Organizations of Medical Sciences and the Union of International Associations. Through its relations with the World Health Organization, the Federation is indirectly affiliated to UNESCO. The Federation is also in contact with the World Medical Association sending whenever possible a representative to the World Medical Association meetings and welcoming a representative of the World Medical Association at its own annual sessions. In the dental field itself, two specialized international groups—the European Organization for Research on Fluorine and Dental Caries Prevention (O.R.C.A.) and ARPA Internationale—are affiliate members of the Federation, as is the Asian-Pacific Dental Federation.

TASKS FOR THE PRESENT AND FUTURE

From what has been said, it should be clear that the *Fédération Dentaire Internationale* is indeed a world organization. Such an organization, however, has obligations both for the present and the future. It can and should create standards for dental education; it can create standards for modern dental equipment, dental materials, military dental equipment, methods of investigation, nomenclature and documentation. It can help the dental profession in those countries where social and economic problems make its existence increasingly difficult; it can advise the lesser developed countries as to how to improve and develop their dental services and provide dental care for the whole population.

Briefly, it may be said that the *Fédération Dentaire Internationale* can develop into what its officers and members wish it to be, given adequate support by the national dental associations and their individual members.

ADVANTAGES AND OBLIGATIONS OF MEMBERSHIP

The basic principle is that the national member associations finance the activi-

ties of the Federation by their annual subscriptions, but there is also another way of supporting the *Fédération Dentaire Internationale*. For those dentists who are interested in the Federation and its work, there is the possibility of becoming "supporting members", with the proviso that they are members of their own natural organization. Supporting members are entitled to:

1. Have their name published in the *International Dental Journal*.
2. Receive a membership card annually.
3. Receive the quarterly *News Letter*.
4. Receive a concession in fees at annual sessions and the quinquennial dental congresses which provide an opportunity of making innumerable friends and of renewing friendships every year in different countries.
5. Receive the quarterly *International Dental Journal*.

The annual subscription, which includes the *International Dental Journal*, is \$15 per year. Supporting membership in the Federation is not offered so much for the material benefits it gives to dentists but rather for the opportunities it affords them of making a personal contribution to the development of dentistry in all parts of the world and to the improvement of the status of the profession. It is no doubt evident to the great majority of dentists that it is important for them to lend their support to their national organization. That they should in addition be a member of an international organization may perhaps be more difficult for many to understand. It is naturally easier to understand the direct advantages of membership in the national organization. At one time, however, it was a matter of prevailing upon a colleague to become a member of his own

national association. It is simply a question of continuing development and of countries drawing closer together, thus making the need for an organization providing an international platform increasingly obvious. For this reason the need for a United Nations Organization was recognized and for this reason the World Health Organization was established. For the same reasons an international dental organization is necessary, provided we wish to work for a natural development in the dental world as well.

Supporting members play an invaluable part in assisting the development of dentistry throughout the world and, what is particularly vital in these days of differing political ideologies, in promoting understanding amongst the nations. Now that rapid means of communication have diminished the distances separating the countries of the world and social security and health care are being organized internationally, dentistry needs more than ever an international organization capable of speaking on a voluntary basis at an international level on dental affairs. Demands on the Federation grow steadily, and it is only with the continued and increased support of its member associations and supporting members that the Federation can continue and extend its work to further the progress of dentistry in all parts of the world.

However, as the old saying goes "The proof of the pudding is in the eating" and the best way of assessing the work of the Federation is by attending one of its annual sessions or quinquennial congresses. Here one may witness the practical implementation of all that the writer has endeavoured to convey in this article. In 1962 the Federation comes to the end of another quinquennium and what has been achieved in the field of dentistry since the congress in Rome in 1957 will be reviewed at the XIIIth International Dental Congress in Cologne, July 7-14. In addition to an extensive scientific program, the Cologne organizing committee is arranging a series of attractive social events including Chinese lantern cruises

on the Rhine, a banquet, ball, organ recital in the cathedral, chamber music concerts, opera, and fashion shows for the ladies. There will also be a vast dental trade show, a scientific exhibition and art exhibition.

We look forward to the pleasure of meeting many Canadian dentists at the Cologne Congress and future meetings. The writer visited Canada in 1959 on his way to the Federation's annual session in New York and has pleasant memories of the warm hospitality shown to his wife and himself by the many Canadian friends and colleagues whom he had the pleasure of meeting. His office in the Fédération Dentaire Internationale during the past fifteen years has brought him in contact with dentists from many different nations and through them he has acquired a better understanding of the many problems that face the dental profession throughout the world. Knowledge of the Federation and its achievements over the years convinces the writer that the best hope of solving these prob-

lems is within an international organization such as the Fédération Dentaire Internationale.

RÉSUMÉ

Le Secrétaire général de la Fédération Dentaire Internationale expose l'origine et l'histoire, les buts et les objectifs, la structure et le fonctionnement de cet organisme dentaire international.

La Fédération Dentaire Internationale se constitue d'un groupement international d'associations dentaires nationales des divers pays du monde qui y adhèrent librement; elle compte aussi des membres qui y apportent individuellement leur soutien. La Fédération organise des réunions annuelles et, tous les cinq ans, des congrès mondiaux.

En 1962, la Fédération achevait un autre quinquennium. Les réalisations de la science dentaire, depuis le congrès tenu à Rome, en 1957, feront l'objet d'une rétrospective au congrès dentaire de Cologne, du 7 au 14 juillet 1962.

35 Devonshire Place

The World Health Organization and its Program in Dental Health

F. BRUCE RICE,* B.D.S., Geneva, Switzerland

Before discussing the dental health program of the World Health Organization, it is essential to have a clear conception of the Organization—its objective, what it is, and how it functions.

*Chief dental health officer, World Health Organization, Geneva, Switzerland.

Its objective, stated simply, is "the attainment by all peoples of the highest possible level of health".¹ The pursuit of this unlimited ideal represents a colossal task which makes essential the co-operation of all states and individuals.

WHAT IS THE WORLD HEALTH ORGANIZATION?

The World Health Organization (W.H.O.) is one of the several specialized agencies of the United Nations and came into being in 1948. Its members are the nations of the world but membership is voluntary as it carries certain financial and other obligations in addition to its material advantages. Although a specialized agency of the United Nations, W.H.O. is independent, is governed by its own central assembly and is responsible for raising its own funds and framing its own program. This "international co-operative for health", as it has been called, now comprises 111 member nations, delegates from which meet once a year at the World Health Assembly (usually held in May) to formulate the Organization's policies and to approve the program and budget for the ensuing year.

ADMINISTRATIVE STRUCTURE

Headquarters. — W.H.O. headquarters is at Geneva, Switzerland, where the director-general, assisted by his secretariat, is responsible for carrying out the policies and current year's work program approved by the Assembly, and for preparing future program proposals and budget estimates for the Assembly's consideration and approval. Prior to submission to the Assembly, each year's program proposals and budget estimates are scrutinized by an executive board consisting of 24 persons designated by the member nations which the World Health Assembly from time to time determines.

The Regions. — A large part of the responsibility for preparing and carrying out programs devolves upon the W.H.O. regional offices, of which there are six: Africa (at Brazzaville), the Americas (at Washington), Eastern Mediterranean (at Alexandria), Europe (at Copenhagen), South East Asia (at New Delhi) and the Western Pacific (at Manila). Each region is in the charge of a regional director,

who is assisted by a staff of regional advisers in specific health fields. Only one regional office—the Americas—has a regional dental adviser at present. However, the Eastern Mediterranean Region appointed a temporary dental health adviser for one year in 1958-59.

In each region there is a regional committee, composed of representatives of the member nations in the region, which meets each year to formulate policies of a regional nature and to discuss the program needs of its members. It is at these meetings that dental health proposals for the member nations and inter-country programs are decided subject, of course, to the final approval of the World Health Assembly.

How W.H.O. WORKS

First and foremost, W.H.O. deals directly with governments and supplies advice and assistance only on request from a government. "The health of a country is the business of the country's government and W.H.O. has no authority to take over any part of that responsibility or to intervene except at the request of the government".²

Secondly, W.H.O. functions mainly by organization and co-ordination. It endeavours "to find the knowledge that is wanted to deal with a health problem and transfer it to the place where it can act. The simplest way is to find a man with the knowledge and experience wanted and to send him, with a supporting team if necessary, to the country that has asked for help. . . . For newer problems the process is more elaborate. If the subject is new to W.H.O., a 'study group' may be called together to consider how it should be tackled. If the medical questions involved are not clear, an authoritative opinion will probably be obtained from an expert committee in which different related views may be combined or reconciled; this opinion may then be forthwith tested in 'pilot' (experimental) projects, or it may be discussed in other meetings, in which the views of public

health administrators and field workers would be increasingly important. In either case, if the experimental projects are successful, the methods are extended to the rest of the country affected. Lack of success may be due to inadequate adjustment to local conditions or to the discovery of gaps in knowledge, which may be dealt with in the field, or referred back for expert advice or more fundamental research. Practice and research interact and complement each other. The report of the expert committee may at the same time enable other countries to attack the problem on their own without direct assistance from W.H.O.”²

An important point to note is that W.H.O. does not have its own research institutions; research is done in national or private research institutions. W.H.O. helps to get together (in person or on paper) the right people to put the results of research to practical use for the benefit of health anywhere in the world.

In many countries the lack of trained personnel, both professional staff and auxiliaries, is a major problem in the development of health services. For this reason, W.H.O. has, from its inception, given special attention to the training of staff of all grades. It has assisted medical, nursing, dental and auxiliary training schools, and has provided fellowships for postgraduate training and for health workers to visit other countries to study the methods used there.

As the requests for assistance are far in excess of W.H.O.'s resources, a selection is made of those projects which will make the best and most lasting contribution to world health. All forms of preventive services and preventive measures therefore have high priority. Further, the resources available within the country requesting help must be capable of sustaining and developing any project after W.H.O. assistance ceases.

A plan of operations is drawn up for each project defining the respective responsibilities of W.H.O. and the government.

It must be realized that dental health

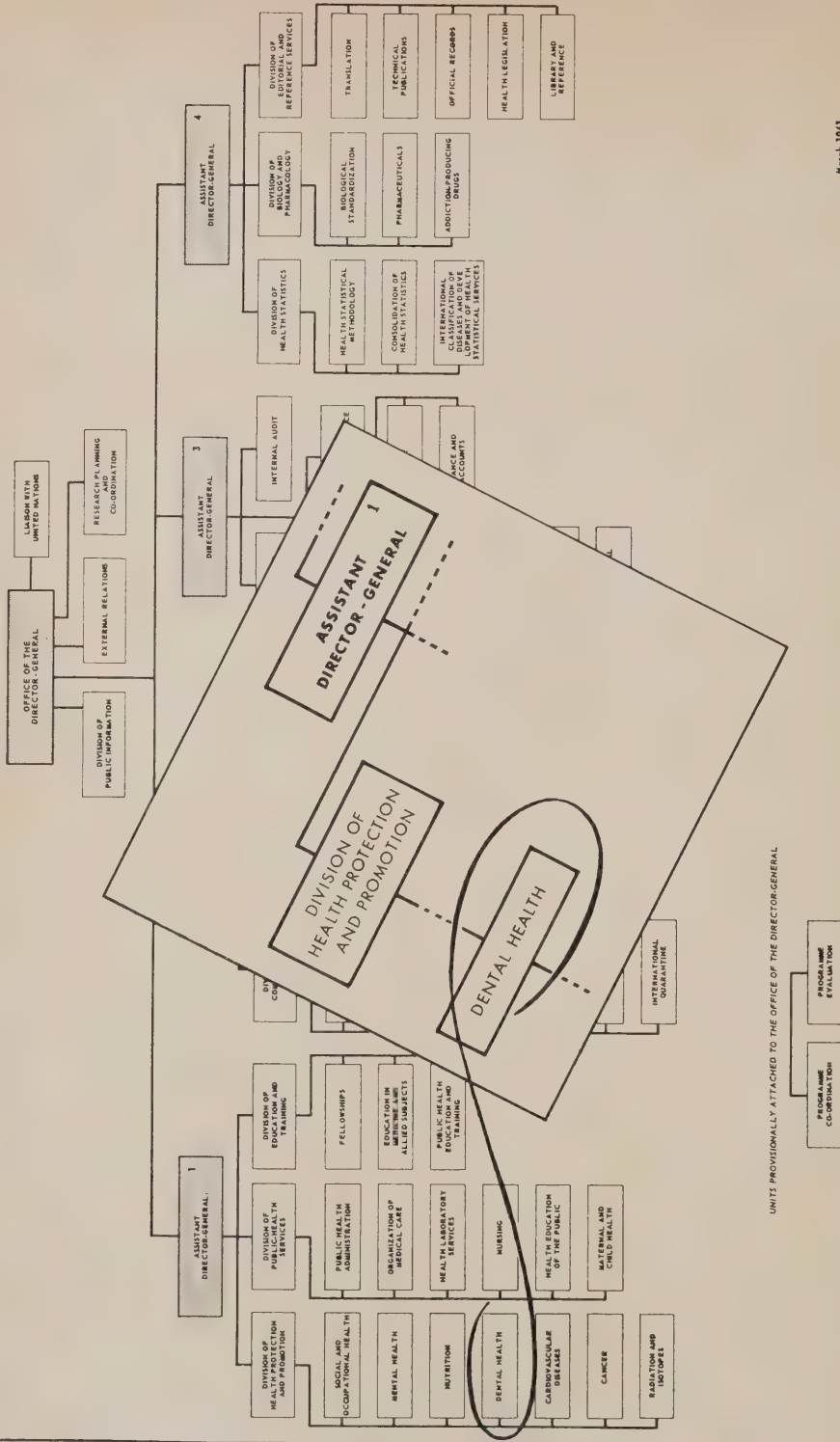
is only one aspect of health in which W.H.O. is interested. A glance at the plan showing the structure of the secretariat at Geneva graphically illustrates this and the complexity of the organization which has been built up in just over a decade. It also provides an indirect answer to any criticism which may be voiced that more should be accomplished in the specific field of dental health.

HISTORY OF THE DENTAL PROGRAM

On August 25, 1948 the World Health Organization entered into official relationship with the *Fédération Dentaire Internationale* (F.D.I.) and ever since then the latter body has consistently aided the promotion of the dental program of W.H.O.

At the First World Health Assembly in 1948 the Polish delegation raised the question of dental health in the W.H.O. program and the subject was again discussed at the assemblies in 1949 and 1950. This resulted in the appointment of two W.H.O. short-term dental consultants, J. T. Fulton and P. E. Blackerby, Jr., both of the United States. The former investigated the school dental nurse program of dental care for children in New Zealand³ and the latter studied the dental health programs of four selected countries, his report being duly presented to the Fourth World Health Assembly in 1951. This assembly passed a resolution requesting the director-general to incorporate a dental program in W.H.O.'s future plans, but, owing to financial limitations, this was not implemented until 1953, when a third short-term consultant, G. Toverud of Norway, was appointed to study water fluoridation as a caries-preventive measure.

In 1954 two W.H.O. observers attended the F.D.I. meeting in Scheveningen, Netherlands, where discussions were held with F.D.I. officers on the future dental health program of the Organization and in September of that year a consultant group met in Geneva to formulate a report on which a program could be based. The chairman of this group was J. W. Knutson, former assistant surgeon gen-



March 1961

eral and chief dental officer, U. S. Public Health Service, who, the following year, was loaned to W.H.O. headquarters for six months as its first dental health officer. Dr. Knutson was followed in 1956 by C. L. Sebelius and the writer succeeded Dr. Sebelius in September 1958.

DEVELOPMENT OF THE DENTAL HEALTH PROGRAM

The year 1954 was a significant one for dental health for, in addition to the developments mentioned in the previous paragraphs, two other events of note occurred—the convening of the first World Health Dental Seminar (in Wellington, New Zealand) and the appointment of the first regional dental adviser, Mario Chaves (to the Regional Office for the Americas).

It is unnecessary to discuss all our program activities in detail, but an attempt will be made to give a brief summary which will convey a fairly complete picture of what has been accomplished so far.

INTER-COUNTRY MEETINGS

1954 — *Dental Seminar, Wellington, New Zealand.* — Organized by the Western Pacific Regional Office, this meeting was attended by 37 individuals from 21 countries—Australia, China (Taiwan), Fiji, Hong Kong, Japan, Korea, Malaya, New Zealand, North Borneo, Philippines, Sarawak, Singapore, Territory of Papua and New Guinea, and Viet Nam (all of the Western Pacific Region); Burma, Ceylon, India, Indonesia, and Thailand (of the South East Asia Region); Egypt and Iran (of the Eastern Mediterranean Region).

Seven consultants, drawn from the United Kingdom, India, New Zealand, United States of America, Norway and Malaya, presented papers on selected topics, and each participating country submitted a summary of its dental health problems and of the steps being taken to meet them.

1958 — *Study Group on Dental Health Services for Children, Brussels, Belgium.* — Organized by the European Regional Office, this meeting was attended by 19 participants from 14 countries—Belgium, Bulgaria, Denmark, Finland, Ireland, Italy, Netherlands, Norway, Scotland, Sweden, Switzerland, the United Kingdom, U.S.S.R. and Yugoslavia.

The group discussed methods used in the field of administration, preventive measures, curative services, and dental health education as relating to children's dental health services.

1959 — *Dental Seminar, Adelaide, Australia.* — This was designed as a follow-up seminar to the one in 1954, and its main purpose was to assess the progress made in the participating countries in meeting their dental problems during the five-year period since the previous seminar. The countries participating were similar to those for the first seminar but with the addition of Netherlands New Guinea, the U. S. Trust Territory of the Pacific Islands, Western Samoa and Pakistan. (North Borneo, Burma, Egypt and Iran were not represented at this second seminar.)

1960 — *Dental Seminar on Dental Health Services for Children, Göteborg, Sweden.* — This meeting was organized by our European Regional Office and was attended by 43 participants from 26 countries — Albania, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Morocco, Netherlands, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, the United Kingdom, U.S.S.R., and Yugoslavia. In addition to one consultant there were 13 temporary advisers, while two observers, one from the F.D.I. and one from the European Organization for Research on Fluorine and Dental Caries Prevention (O.R.C.A.), attended by invitation.

An endeavour was made to keep the discussions on the practical aspects of

children's dental health such as preventive and curative services, the use of auxiliaries, dental health education, dental statistics and the teaching and training in paedodontics at both undergraduate and postgraduate levels.

In all those inter-country meetings, W.H.O. pays the travel costs and a per diem allowance for all the participants and consultants, plus the W.H.O. secretariat. The host country provides the conference accommodation and makes all local arrangements.

Each seminar produces a report of its findings which is sent to all member governments and to the participants. A limited number of these reports is also available to meet requests from interested organizations and individuals.

One of the important benefits of such meetings is that useful personal contacts and friendships are made, the outlook of participants is broadened, and much useful information is exchanged not only in the formal meetings but in informal discussions. The writer has attended each of the seminars and has been much impressed by the unanimity and harmony which prevails among members of the profession. Spirited discussions certainly take place on such subjects as the scope of the duties which may be entrusted to auxiliaries but these are conducted on a friendly plane and never become acrimonious. Generally speaking, the "newer" countries are more ready to adopt new ideas such as fluoridation and the wider use of auxiliaries than the older, more conservative countries.

MEETINGS OF EXPERT COMMITTEES

The dental program has fully utilized this medium of providing guidance and authentic information for governments. Experts on the selected topic for study are brought together and formulate a report which is published and circulated to governments and is also available to the public. In 1957 an expert committee con-

sidered the question of water fluoridation,⁴ in 1958 the selected subject was auxiliary dental personnel,⁵ in 1960, periodontal disease,⁶ and in 1961, the standardization of reporting of dental diseases and conditions. In 1962 an expert committee will consider the subject of dental education.

All of these subjects have an important bearing on dental health problems, particularly from the viewpoints of dental manpower, public health and prevention.

SHORT-TERM CONSULTANTS

As mentioned previously, one of the simplest methods of affording assistance to governments is "to find a man with the knowledge and experience wanted and to send him, with a supporting team if necessary, to the country that has asked for help". A consultant is usually appointed for specific periods ranging from one month to one year or even longer and he may be asked to visit more than one country. The reports of consultants are restricted in circulation to the governments concerned and to W.H.O., except when the governments agree to their publication. Mention has already been made of the first three dental health consultants appointed by W.H.O., and many countries have benefited from this form of assistance since then.

In 1955 a consultant was appointed to Switzerland to demonstrate the use of mobile dental clinics for children living in mountainous country. In the same year, another consultant visited Indonesia and Malaya and the following year India, to advise on dental education. In 1956 a consultant visited the Philippines and Hong Kong to advise on the development of their dental services. A consultant visited Thailand in 1957 to advise on dental education and dental services generally and in 1960 he paid a follow-up visit to assess the progress made since his previous visit.

The year 1957 also saw the initiation of a joint activity by W.H.O., the Ministry of Health of India, the India Medical Re-

search Council and the United States Public Health Service to study the epidemiology of periodontal disease in India. W.H.O. and the U. S. Public Health Service both provided consultants on this occasion.

Other short-term consultants have been provided by W.H.O. for China (Taiwan) in 1958 to study the relationship of nutrition to dental disease, for Ceylon (1960) to study periodontal disease and for Ghana (1961) to survey dental problems.

In addition, the regional dental adviser for the Americas has made a number of surveys in Central and South America and the temporary dental adviser to the Eastern Mediterranean Region in 1958-59 made surveys in Egypt, Syria, Iran and the Sudan. On occasions the dental health officers at headquarters have also acted as short-term consultants for the regions.

Special mention should be made here of the active part played by the regional dental adviser for the Americas in the establishment in 1958 of an annual postgraduate course in public health dentistry at the School of Hygiene and Public Health of the University of Sao Paulo, Brazil. This project—a joint activity of W.H.O., the W. K. Kellogg Foundation and the University of Sao Paulo—has already graduated 55 candidates in public health dentistry, while 29 public health dentists have taken a shorter, special orientation course of six weeks in this subject.* A treatise on public health dentistry, in Portuguese, has also been prepared by the regional dental adviser and the staff of the school.

FELLOWSHIP PROGRAM

Since the inception of W.H.O., 132 dental health fellowships have been awarded.

The studies undertaken range from short-term study tours to observe dental care and dental education programs to the taking of postgraduate courses and, in a limited number of instances, undergraduate courses.

In this type of assistance, applications must be sponsored by governments, which must also indicate the nature of the post to be filled by the fellow on completion of his fellowship.

While most of the fellowships granted to date have been in the fields mentioned above, the writer hopes that, in the future, fellowships will be awarded more widely to water engineers to study fluoridation programs and to individuals interested in dental research, that is, for the training of research workers and also to enable senior research workers to study dental research programs in other countries.

DENTAL RESEARCH PROGRAM

Mention has been made earlier that W.H.O. does not have its own research institutions, but nevertheless the support and encouragement of research holds an important place in the Organization's program. When a consultant visits a country to advise on its dental problems, it is inevitable that he must make an assessment of the prevalence and severity of dental diseases. In doing so, he usually has the assistance of one or more of the dentists in the country and this is a valuable means of stimulating them to carry on when he leaves. It may be that local dental personnel lack the knowledge or confidence to utilize modern dental epidemiological techniques and the visit of the consultant will help to "trigger" their latent ambitions to do so.

Dental health is an integral part of general health and, as such, it is intimately related to many other health activities. This is especially so in such fields as nutrition, health education, public health services, social and occupational health, and in the education and training of health personnel. Less obvious, but pos-

*For many years postgraduate training in dental public health for dentists in the South East Asia and Western Pacific Regions was available only in the United States, Canada and the United Kingdom. The need for such a course in these regions was voiced at the Adelaide Seminar in 1959, and in 1961 the University of Sydney commenced its first course.

sibly equally important, is the relationship of dental disease to systemic disease, and vice versa. Losee et al¹⁷ state: "The dental tissues are indicators of environmental conditions which not only affect dental health but systemic health as well. There is mounting evidence that one disease can serve as a warning that we may be on the threshold of another, especially with those diseases wherein nutrition is a factor".

It is certain that the dental profession must take greater cognisance of medical research and that the medical profession must do likewise with dental research. Close collaboration in field studies, as instanced by the United States Interdepartmental Committee on Nutrition for National Defense which always includes one or more dentists in its research teams, is fundamental if the hidden factors of disease are to be unearthed. In the past there has been too great a tendency to regard dental and medical research as separate and distinct entities. An organization such as W.H.O. provides a favourable climate for mutual collaboration and the writer hopes that this will be developed to the stage where joint research projects will frequently be undertaken.

CONCLUSION

An endeavour has been made to give as much information and as brief an account as possible of the World Health Organization and of its dental program and it is hoped that the interest of the reader has been sustained and perhaps stimulated.

There is great scope for further development of our program but, as pointed out earlier, we must receive requests from governments before we can initiate more dental projects. It is here that the dental profession through its national associations can play a useful role by suggesting to their governments worthwhile dental projects which can utilize W.H.O. support, and by pressing for their implementation. The *Fédération Dentaire In-*

ternationale has been active in bringing this fundamental point home to its member associations and in developing in them an "international outlook". It now remains to interest the individual members of these associations, the vast majority of whom are private dental practitioners, in the national and international problems associated with dental health. Public health dentists could help to do this by ensuring that all pertinent national and W.H.O. reports and publications are available to members or are discussed at dental society meetings, thereby bridging the gap which many practitioners feel exists between private practice and dental public health. Only in this way can dental society members obtain an insight into the broader problems facing the profession and, by so doing, create professional unity of thought and action in solving them.

Dental educators, private practitioners, dental research workers and public health dentists are all striving in a cause common to all health workers, namely, to raise the level of health of all people. This is also the objective of the World Health Organization, but on an international scale. It therefore deserves the active interest and support of all the health professions and of their individual members.

SUMMARY

The objective, structure and functioning of the World Health Organization have been outlined.

The history of the dental health program and its accomplishments to date are described.

Dental health is only one of many activities engaging the attention of the World Health Organization.

The development of the dental health program is dependent upon the dental needs of countries being made known to their governments, and the dental associations, as the voice of the profession, can do this effectively if they so wish.

The need for individual members of the profession to acquaint themselves with

the nature of national and international dental problems and to give some thought to their solution is stressed.

RÉSUMÉ

L'auteur commence par décrire les objectifs, la structure et les méthodes de l'Organisation Mondiale de la Santé. Après avoir ensuite retracé les étapes et dressé le bilan des activités de l'Organisation en matière d'hygiène dentaire, il souligne l'importance qu'il y a à ce que les dentistes s'intéressent à la question sur le double plan national et international et il met l'accent sur la contribution que les associations professionnelles pourraient apporter à l'oeuvre de l'O.M.S. en général

et à son programme d'hygiène dentaire en particulier.

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Palais des Nations

CASE REPORT

A Case of Cushings Syndrome

J. V. P. CHATWIN,* D.D.S., Kingston, Ontario

Cushings syndrome is a condition rarely seen in medical practice. In 1943, 123 cases verified by autopsy were collected from the literature.¹

Diagnosis is relatively easy, and this condition is of interest to the dentist since radiographic evidence of bone demineralization is an early finding and the dentist may be asked to confirm osteoporosis of the facial bones pertinent to his field. Another early finding is the loss or reduction of the lamina dura.²

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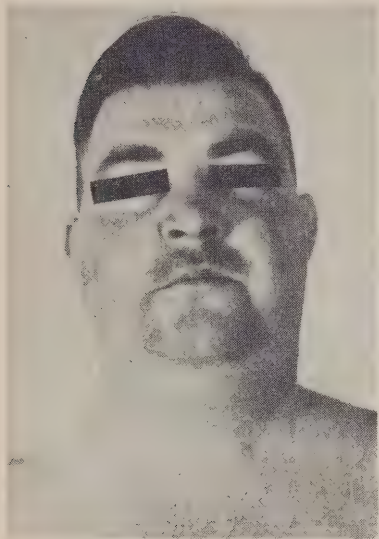


FIGURE 1



FIGURE 2

CASE HISTORY

History and Examination.—The patient was a 23-year old male, who presented in January 1961 with a 16-months history of weakness, lassitude, and gain in weight. Subsequently, there were marked striae of the skin and loss of libido. On physical examination, there was a characteristic Cushingoid appearance with a florid facies, obesity of the face, neck and trunk, (Figure 1) and relatively small arms and legs with reduced muscle bulk. There were prominent deep reddish-purple striae, especially about the abdomen, buttocks, axillae and upper arms. Blood pressure was normal. The remainder of the physical examination findings were normal. The chief laboratory findings revealed normal haematological characteristics, relatively high serum sodium, and a diabetic type of glucose tolerance curve. The twenty-four hour urine specimen showed moderate elevation of 17-hydroxycorticoids and 17-ketosteroids, confirming the presence of adrenocortical hyperfunction. A chest radiograph was normal. Radiographs of the spine showed a mild degree of osteoporosis. The dental radiographs (Figure 2) showed considerable reduction of the lamina dura and an increased radiolucency of the alveolar bone.

Surgical Procedure.—A bilateral adrenalectomy was performed. Microscopic examina-

tion revealed evidence of adrenal hyperplasia only.

Postoperative Course.— Since the operation the patient has recovered his wellbeing and strength, and has required only the usual maintenance dosage of prednisone and fluorohydrocortisone.

DISCUSSION

This syndrome is an adrenocortical hyperfunction syndrome characterized by obesity of the head, neck and trunk leaving the extremities remarkably slender. It occurs more frequently in females and is most common in the third and fourth decades though it has been reported in children. The fat pad in the back of the neck is often referred to as a "buffalo hump". Hirsutism, thinning of the skin, strikingly similar facial appearances due to the moonshaped contour of the face, nervousness, and menstrual irregularities are common features of the disease.

The aetiology is based on bilateral adrenal hyperplasia or a hyperfunctioning adrenal adenoma.

The lamina dura is a thin cortical layer of bone lining the tooth socket and is an important structure in the confirmatory diagnosis. It may not be seen in its entirety as a sharply defined thin white line throughout its entire length in every case. There is considerable variation in width, density, sharpness and continuity of the shadow of the lamina dura in different cases due to variation in angulation and irregularity of the root shape.³ The reduction or loss of the lamina dura and osteoporosis of the maxilla and the mandible are readily confirmed with good intra-oral radiographs.

Treatment, in the presence of an adrenal tumour, is surgical and in case of bilateral hyperplasia several treatment plans have been tried. The most acceptable procedure today appears to be total bilateral adrenalectomy, with the result-

ing adrenocortical insufficiency controlled therapeutically.

SUMMARY

A case of Cushings syndrome is described. The interesting dental facet of this case involved the confirmatory diagnostic signs of osteoporosis and loss of lamina dura noted in the dental organ.

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RESEARCH ANNOTATIONS

FURTHER STUDIES ON A PHYSIOLOGICAL ANTIHISTAMINE

L. E. Francis, K. I. Melville, and D. E. Douglas, Faculty of Dentistry, McGill University, Montreal, P.Que.

It has previously been shown by Francis and Melville¹ that experimental animal and human gingival tissues contain histamine and some histamine inhibiting sub-

stance. The inhibitor appeared to vary in amount depending on the state of the tissue, as to whether it was normal, inflamed or hyperplastic.

Due to the difficulty of acquiring adequate amounts of gingival tissue to carry out this investigation, other organs were also studied. The human colon was discovered to have comparable amounts of the inhibitor. Normal, inflamed, and cancerous colon has been studied and compared along with normal, inflamed, and hyperplastic gingiva. The histamine was first extracted and assayed using the

Summaries of reports delivered at the First Canadian Conference on Dental Research held at Toronto, October 30-31, 1961.

modified method of Barsoum and Gaddum.² The assays were done on strips of guinea pig ileum (approximately one inch in length) placed in a 4 ml. bath containing atropinized Tyrode solution, suitably aerated. The amount of histamine was first calculated from the various tissues. The histamine inhibitor could then be isolated.

The histamine inhibitor could be isolated in crude form by adsorption from the neutralized gingival and colon tissue hydrolysate with activated charcoal and elution with 3N hydrochloric acid, or by its extraction into ether and chloroform from the neutralized tissue hydrolysate.

The crude material so obtained was applied to Whatman No. 1 paper and was chromatographed in a butanol-acetic acid-water medium by the descending technique. Serial strips were cut from the developed chromatogram, were eluted separately with aqueous ethanol and the eluates tested by bioassay. Inhibitory activity was most pronounced in the region of R_f 0.83 to 1.0.

Experiments are in progress to elucidate the chemical nature of this inhibitory substance.

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FURTHER STUDIES ON THE PRODUCTION OF IN VIVO PLAQUE pH CURVES, IN VITRO

I. Kleinberg, Faculty of Dentistry, University of Manitoba, Winnipeg, Manitoba.

In studies on dental plaque in situ (Kleinberg, 1961)¹ and saliva-glucose mixtures in vitro (Kleinberg, 1960 and unpublished experiments)² it was observed that the behaviour of the oral

micro-organisms in these two systems were qualitatively similar and became quantitatively quite similar when the cell concentration in the saliva mixtures was increased to levels approaching that for plaque. The kinetics and certain theoretical aspects related to these systems were considered and presented in the former of the above investigations to which the latter study provided considerable support. To assess these theoretical considerations still further and to determine whether pH curves for plaque in vivo could be duplicated in vitro (cf. Stephan and Hemmens, 1947)³ the saliva-glucose system was studied under conditions of varying saliva sediment concentration and with substrate concentrations at limiting and non-limiting levels. The final saliva sediment concentration (and therefore cell concentration) in the various incubation mixtures varied from 0 to 33.3 per cent (V/V); the final glucose concentrations from 0 to 30 per cent (W/V).

With the highest sediment concentration, the curves in vitro were quite similar in shape to that for plaque in vivo with the slight differences observed being due to the former system being essentially closed whereas the latter is open. As sediment concentrations were lowered, the curves progressively approached those usually observed for saliva. Since incubated saliva-carbohydrate mixtures are used in various caries susceptibility tests (as well as in saliva calcium phosphate solubility studies), the present investigation provides means for carrying out such tests under more precise conditions and for relating them to conditions occurring within dental plaque.

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CITRATE METABOLISM IN BONE (LE METABOLISME CITRATE DANS L'OS)

J.-P. Lussier, Faculty of Dental Surgery, Université de Montréal, Montreal, P.Que.

For a long time neglected in the biochemical study of bones, the organic compounds are now taking on a greater importance. Biologists are in the process of identifying in bone and its surrounding tissues most of the compounds responsible for the production of energy and especially those which are regulated through the Krebs cycle; among these compounds citrate and lactate have received increased attention. Changes in the concentration of these salts when certain influences are present, may bring information relative to the rate of energy production and the direction of the metabolic reactions. However, the mechanisms through which these variations occur are not completely known.

These compounds, so-called biological compounds, because their synthesis takes place in the organism, may be found in bone on account of extrinsic factors. But they may also occur there due to some normal physiological process which could likewise take place in the bone tissue. If so, their presence is not independent of what happens in other tissues or organs and they must be regulated through the same controlling agents already present in other organs. Comparative studies of what happens in bone and in other tissues under the same experimental conditions could establish the validity of this hypothesis. General patterns could be confirmed and particular pathways could be explored.

The purpose of the experiments which will be reported is to establish the relationships of citrate metabolism in bone and in other organs of normal animals and to evaluate the role of different hormonal treatments on bone citrate. Results will be discussed in the light of the previous contributions on this topic.

Longtemps négligés, les sels organiques prennent une importance de plus en plus grande dans l'étude biochimique de l'os. On a, en effet, identifié dans l'os et les tissus qui l'avoisinent à peu près tous les composés responsables de la production d'énergie et qui sont régularisés par le cycle de Krebs. Le citrate et le lactate subissent, en certaines circonstances, des changements de concentration qui peuvent nous renseigner sur le taux d'énergie produit et sur le sens des réactions métaboliques. Cependant, les mécanismes de qui dépendent ces variations ne sont pas encore complètement élucidés.

Comme il s'agit ici de composés biologiques, c'est-à-dire de composés dont la synthèse et l'utilisation se font dans l'organisme, on peut difficilement admettre que la présence dans l'os soit indépendante de ce qui se passe dans les autres organes et qu'elle échappe aux facteurs de contrôle. Il est donc indiqué de faire des études comparatives entre l'os et les autres tissus ou organes dans les mêmes conditions expérimentales, pour arriver à saisir la portée générale des mécanismes en cause tout comme les particularités qui les différencient dans certains organes.

C'est le but des expériences qui seront rapportées. Elles ont été entreprises pour démontrer comment le métabolisme du citrate se compare dans l'os chez les animaux normaux ou chez les animaux privés de rein ou de foie ou encore sous l'influence de certains traitements hormonaux; on discutera dans quelle mesure ces données s'intègrent aux connaissances déjà acquises en ce domaine.

NATURE OF THE CARIOSTATIC ACTION OF DIETARY PHOSPHATES

J. Tuba, L. J. Heppler, and C. R. Castaldi, Department of Biochemistry and Faculty of Dentistry, University of Alberta, Edmonton, Alberta.

These studies with dietary phosphates were planned to determine whether

cariostatic effects are local, systemic or both. Weanling hamsters were used, and litter mates of both sexes were distributed evenly between 5 groups. Group 1 (14 animals) received the basic cariogenic diet (C) or Nizel and Harris.^{1,2} Groups 2 and 3 (10 animals each) subsisted on diet (C) plus Na_2HPO_4 added to increase total P values two and three times respectively. Groups 4 and 5 (10 hamsters each) ate diets of Groups 2 and 3, but Na_2HPO_4 granules were enteric-coated to minimize local effects of phosphate and thus aid in evaluation of the extent of systemic cariostasis. The 54 animals subsisted on experimental regimes for ten weeks. At the termination of the experiments caries scores were obtained. Salivary pH and P content were also determined.

Additional information concerning local effects was obtained from studies using oral bacteria, *Lactobacillus casei*, and *Streptococcus lactis*. Bacterial suspensions were placed in Warburg reaction vessels under conditions permitting normal growth and acid production. The latter was estimated manometrically by carbon dioxide evolved from the bicarbonate buffer. After establishment of a steady state of acid production, phosphate solution was added from the side arm to give concentrations in reaction mixtures corresponding to those in the diets. The degree and extent of competitive inhibition of acid production was affected by the amount and kind of phosphates added.

These studies indicate the possibility of both local and systemic effects of phosphorus compounds in cariostatic diets.

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A CONTINUING STUDY OF CRACKS IN TEETH ASSOCIATED WITH VARIOUS ROTARY CUTTING INSTRUMENTS

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A previous study of cracks produced in teeth as a result of contact with various rotary cutting instruments and power sources indicated that this phenomenon occurred with a degree of frequency and severity depending on the type of cutting point and power source that was used. The results obtained were based on a study of two hundred extracted lower human incisors whose labial surfaces were prepared with a class V type cavity. The present investigation concerns itself with determining the cracking effect on surfaces other than the labial, as well as on teeth in various parts of the oral cavity. Cavity preparations simulating classic design of common classifications are being utilized with the purpose of determining the effect on the area of tooth structure adjacent to the cavity margins. The technique of penetration with a fluorescent dye and visual inspection under ultraviolet light developed for this type of study is described. Further refinements are discussed with the possibility of adapting the fluorescent dye penetration technique for in vivo application. Photography is utilized for evaluating alterations in the tooth by mounting before and after films on a single slide and projecting them on a screen. The relationship of these aberrations to restorative dental procedures is discussed and work is now in progress investigating the relationship of these defects to the histological pattern of the tooth with emphasis on the dentoenamel junction.

Subscribers to the *Journal of the Canadian Dental Association* should notify the Managing Director, 234 St. George Street, Toronto 5, Ontario, of their change of address before the 20th of the month, to become effective the following month.

EDITORIALS

The Canadian Dental Association's Brief to the Royal Commission on Health Services

The brief which the Canadian Dental Association submitted to the Royal Commission on Health Services at Ottawa, March 20, represents the most comprehensive analysis of dentistry ever undertaken in Canada. Its findings, conclusions and twenty-three recommendations provide a clear perspective of the goals toward which this country must strive if it is to master one of its foremost health problems.

It is too often lightly assumed by the public that the problem of dental ill-health can be solved merely by providing a greater volume of treatment and by removing any obstacles in the path of those seeking dental care. As every dentist knows, this is an over-simplification of the facts. The dental health problem will never be solved unless the prevalence and incidence of dental diseases are drastically reduced. For as the brief notes:

"... Dental diseases are largely preventable; yet they are virtually universal. Almost everyone needs dental care; yet in any given year only one-third of the population visits the dentist.

"Behind these paradoxes lie the reasons for this country's dental health problem. And the provision of treatment services is not the answer. In fact, dental manpower would be swamped and financial

resources severely taxed if an attempt were made to cope, by means of treatment alone, with the present magnitude of Canada's true dental needs."

For this reason the Canadian Dental Association resolutely opposes the introduction of a comprehensive dental treatment program for persons of all ages and cannot lend support to a national dental insurance plan at this time.

The fullest utilization of all possible preventive measures, redirection of public demand which places an excessive premium upon terminal forms of dental care, and more productive exploitation of present and future dental personnel of every kind are the essential prerequisites for an effective solution to Canada's dental health needs.

It is to these problems and the practical application of measures whereby they may best be solved that the Association has directed its recommendations. To this end the brief proposes: mandatory fluoridation of all communal water supplies; intensified diagnostic and educational dental public health programs for preschool and school children; more funds for dental research; institution by the provinces of profession-administered dental treatment benefits for all public assistance benefi-

ciaries; additional dental schools and dental teachers; the removal of economic barriers to higher education as a means of encouraging more students to apply for university admission; establishment of a revolving dental students loan fund; realistic measures to alleviate the shortage of dentists in rural areas; financial support for operational research relating to the extension of auxiliaries' services

and more effective utilization of hospital-based dental facilities.

There is no doubt that the Association's brief provides a rational assessment of the nation's position with respect to dental health. As a basic tool in the hands of the Royal Commission, of governments at all levels and of the profession, may it have a profound influence for the benefit of our fellow citizens.

Proteolysis-Chelation Theory of Dental Caries

A theory is an essential part of experimental design and scientific progress. The idea that a hormone may regulate glucose metabolism spurred the work leading to the discovery of insulin. Similarly, the idea that bacterial action on certain foods may give rise to substances causing tooth destruction was the impetus for many investigations which are at present embodied in the 'chemico-parasitic' theory of dental caries. More recently, A. Schatz and co-workers,^{1,2} proposed the 'proteolysis-chelation' theory of dental caries. This theory has received a considerable amount of publicity and a review of the evidence supporting it appears timely.

Briefly, the main concept designated as 'proteolysis-chelation' implies a simultaneous microbial degradation of the organic components (hence, proteolysis), and the dissolution of the minerals of the tooth by the process of chelation. Chelation, as it applies to this theory, refers to dissolution of tooth minerals by substances which form tightly bound complex ring structures with cations such as calcium over a wide range of pH. As with most theories, the original postulates have been extended to include any

'chelator' whether derived from the breakdown of the organic part of the tooth or products of bacterial metabolism such as citric acid, lactate, and organic phosphates.

It is not easy to adequately evaluate the publications relating to 'proteolysis-chelation' because of the shortage of the quantitative data. According to this theory, the initiation of caries results from a "qualitative biochemical change of the enamel organic matter". The nature of the change and the evidence for it is most obscure. Most publications which relate to the ability of oral bacteria to break down undecalcified enamel indicate that the tissue is either not affected or only slightly. Schatz has published work³ suggesting the presence of keratinolytic organisms in the saliva based on the increased oxygen uptake of salivary bacteria to which enamel was added. The increased respiration may have resulted from the presence of soluble organic components in enamel rather than from the breakdown of 'keratin'. Further, it cannot be stated that 'keratin' is a major organic component of enamel since published analyses have been on crude preparations. The recent work on enamel pro-

teins by Eastoe⁴ and Piez,⁵ does not support the original idea that enamel protein is a 'keratin'. It is difficult to understand why Schatz has insisted that the initial lesion involves a "qualitative biochemical change in the enamel organic matter". If the action of chelators, complexing, or other agents dissolves the mineral part, the frail organic framework of enamel will automatically disintegrate.

As far as the process of chelation is concerned, Schatz has referred to a wide range of complexing substances that undoubtedly exist in the oral cavity. Some of the agents, such as amino acids, may result from proteolytic action; others, such as lactate and citrate, may be products of bacterial metabolism. However, no adequate quantitative data have been published in which dissolution of enamel by chelators or complexing agents has been studied under chemical conditions approximating those that exist in the saliva and particularly the dental plaque.⁶ Since complexing agents (including chelators) are present in the oral cavity, they may be involved in tooth mineral dissolution, but the significance of this process in caries has yet to be determined.

The 'proteolysis-chelation' theory has been proposed and should be evaluated

from time to time on the basis of new evidence. The sparseness of data is to be expected as the theory was originally advanced only in 1954. On the basis of the publications to date, there is no reason to abandon the chemico-parasitic acid theory in favour of proteolysis-chelation. Schatz, in one of his papers,⁷ quotes Claude Bernard as follows, "When you encounter a fact which contradicts a prevailing theory, you must adhere to the fact and abandon the theory, even though the latter is supported by big names and is widely accepted". This appears very reasonable to us; but, first, we need the "facts and nothing but the facts".

G.N.

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C.D.A. Art Exhibit. • Dentists, members of their immediate families and their employees are invited to submit paintings, drawings, photographs, sculpture, metal work, ceramics or any other handiwork in the arts and crafts for display at the Art Exhibit of the forthcoming annual convention of the Canadian Dental Association at Vancouver. Personnel of the Vancouver Art Gallery will handle all exhibits. The Art Exhibit will open with the Sunday Night Musicale on June 3 in the main foyer of the Queen Elizabeth Little Theatre. Entry forms should reach Dr. G. A. C. Walley, chairman, Art Exhibit Committee, 925 West Georgia Street, Vancouver, B.C. not later than May 5. The exhibits, to arrive on May 25, should be addressed to: Art Exhibit, C.D.A. Convention, Queen Elizabeth Theatre, Vancouver, B.C. All exhibits not called for before June 8 will be returned immediately at C.D.A. expense.

BUREAUX, COMMITTEES AND COUNCILS

Comments on the Survey of Dentistry in the United States: 3. Dental Education

Council on Education

Substantial benefits should accrue to any organization or society from a periodic review of its objectives, its accomplishments and shortcomings, in an effort to determine "the desirable areas of future growth and development".

At the instigation of the dental profession in the United States, such an appraisal of dentistry was undertaken by the American Council on Education through its Commission on the Survey of Dentistry in the United States, under the chairmanship of John A. Perkins, president of the University of Delaware.

Although their observations may not always be comforting, or even acceptable, the opinions of informed laymen provide a refreshing and stimulating point of view. It was a wise decision, therefore, to appoint senior representatives from the areas of education, business, industry, and other health professions, to the sixteen-member Commission. The possibility of professional prejudice unduly influencing the findings was minimized by the appointment of only four dentists. The Canadian profession is proud that one of its leaders, Dr. D. W. Gullett, was honoured by being selected as a member of the Commission.

The careful and broad study has resulted in a splendid report; and one must admire the subtlety and restraint exercised in its presentation. The true worth of the study cannot be measured for several years, for it will depend to a large degree upon the extent to which the profession and the public accept and implement the recommendations and findings.

Dentistry in Canada so closely parallels the situation in the United States, that a careful study of the final report of the Commission should be almost equally fruitful for Cana-

dians. Differences which may occur are largely those of degree rather than substance. A request was made, therefore, for some observations on the section of the survey report dealing with dental education.

While it is true that substantial assistance in directing the development of the profession should be forthcoming through dental education, educators must take cognizance not only of the requirements but of the demands of the public and of the profession. For this reason, the section on dental education will be more meaningful to those who have studied the full report, which also includes sections on dental health, dental practice, and research. Space permits only a few comments on the broad issues raised. There is, however, much pertinent and extremely fruitful detailed information for all members of the profession and for others who are or should be interested in dental health.

Following a brief outline of the history of previous broad studies on dental education in the United States, the Commission states its present objective as a

"critical inspection of the status quo of Dental Education in two of its functions: (1) as an entity within the framework of higher education in this country, and (2) as a source of practitioners capable of rendering dental health service of the highest quality.

"This report attempts to analyze the various aspects of dental education, to point out areas in which improvements appear necessary, and occasionally to suggest methods to effect improvements".¹

The Commission first sought opinions on dental education from university presidents, administrators, teachers, undergraduates,

graduates, and licensing examiners. They then proceeded to a study of the present curricula and their objectives, to determine, firstly, the quality of dental education, secondly, the quality of the students and teachers, and thirdly, the future requirements for personnel at the undergraduate and graduate level, and concluded with some observations on dental licensing procedures.

It is readily apparent that one of the most significant, if not the greatest problem facing dentistry in the United States (and to a much greater degree in Canada) is the provision of well-qualified personnel, in adequate numbers. It is estimated that in the five-year period prior to 1957-58, there was a 22 per cent increase in the amount of dental care received per capita, and

"should this trend continue, total consumption of dental care in 1975 will be about 120 per cent higher than in 1958."²

"Should the prediction of the level of future demand be overstated by half, the problem of assuring adequate dental manpower in 1975 still would represent a Herculean task. In fact, to train in the brief period of fifteen years the number of dentists needed to meet even part of the tremendous increase in demand is an almost impossible undertaking."³

In Canada, unfortunately, there has been no comprehensive and reliable study of the dental personnel requirements, but even the meagre information available provides ample evidence of an almost insuperable problem. The ratio of dentists to population in the United States is approximately one to 1,800, considered to be far from adequate. In Canada, the ratio is one to over 3,000, and there is no reason to believe that this country has less need for dental care. Assuming that the demand is and will continue to be appreciably lower here, the rate of population increase and of death and retirement, coupled with a more moderate increase in demand than the American figures indicate, will necessitate a much larger supply of graduates than the existing schools are capable of providing. Implementation of a state-financed program for dental services could further increase the difficulties unless very substantial sums of money were provided to extend educational opportunities.

The personnel problem is unlikely to be solved solely by the provision of more facilities and the training of a greater number of dental students. This step is, of course, essential, but it should be coupled with heroic measures to reduce the incidence of dental disease, through public health measures, tremendously increased research activity, the

more effective and efficient use of existing personnel, and also, as recommended by the Commission, through the expanded duties and assistance of auxiliaries.

It is most unfortunate that a realistic and factual appraisal of the future requirements for dental education in this country has not been taken, in order that a concerted plan for development may be projected. Valuable time has been lost and will continue to be lost, because at least two to three years are required for the initial development of any new school, and at least another four to six years will pass before such schools are operating to capacity. The profession must take care that attention is not diverted from this prime consideration. The training and use of auxiliaries should be explored and developed, concurrently with, but not at the expense of, efforts to increase the supply of dentists.

Additional educational facilities must be procured, but it should not be forgotten that exertion is necessary to ensure that the schools are fully utilized. It is true that the present ones are not filled to capacity. This should not be too surprising, in view of the fact that until recently, there has been little recruitment effort, and within a very brief period of time the provision of new and expanded schools has permitted a doubling of the number of dental students throughout Canada. The increased enrolment in the liberal arts colleges and universities, together with active recruitment programs, should do much to reduce the shortage of good candidates for the profession.

The Commission has gathered and presented much useful information and comment for individuals and groups interested in recruitment. They point out the desirability of substantial increase in the number of women in the profession of dentistry. Despite the traditional viewpoint on this continent, unquestionably there is a great opportunity for women in dentistry. There is no reason to believe that they cannot become as competent as men, and moreover, it is extremely doubtful whether there is any other professional career in which it is so easy for them to adapt their lives to joint careers in the profession and marriage.

The Commission also points out that the family dentist is the most influential person in recruiting candidates for the profession. This being so, the number of candidates is likely to be in proportion to the number and active participation of dentists in recruitment programs. Each member of the profession, therefore, must accept a greater responsibility in the matter of recruitment.

Again, it is pointed out that "applicants tend to come from families with a high degree of economic security". Whether or not

this is true to the same degree in Canada may be open to question, but there is no doubt that many academically sound and potentially good students, for economic reasons, do not consider a career in dentistry. Serious attempts should be made to provide substantial assistance to those students from financially less fortunate families, so that there can be no question of the profession being limited to the "sons of the wealthy". Even a cursory study of the post-war D.V.A. students in Canadian schools of dentistry provides ample evidence of the public benefit resulting from financial support to students of meagre resources.

Coupled with concern for the number of dental students, should be a concern for the quality. It is the Commission's opinion that the predental background is too restrictive, and

"it appears that the scholastic records of the 1958-59 applicants were lower than they should be for those wishing to enter a major profession, and, since their (the students) estimates were probably somewhat high, the situation is quite serious for dental education".⁴

Referring elsewhere to applicants, it is stated that they

"have high grade-point averages, but over half of their credits are in the courses required for admission to the dental school. Many of the future leaders of the dental profession probably will be drawn from this group, and it is disturbing that these students are not receiving a broader general education to prepare them for their anticipated responsibilities".⁵

This leads to a consideration of the teaching program. The Commission made no attempt to outline what they consider to be an 'ideal curriculum'. Instead, many excellent comments and suggestions were offered concerning the teaching programs in the various schools, and it is likely that these observations are equally applicable in Canada.

Is dentistry a function of higher education? Is the development of intellectual skills as important as the development of technical skills? If so, then

"Dental education cannot reach maturity in the family of higher education until it pays greater heed to student intellectual development".⁶

Undoubtedly, the immediate reactions are 'yes' and 'a worthy objective', but further honest reflection will lead to other disturbing questions. Do not the perennial problems associated with integration of basic and clinical sciences, oral diagnosis, and fundamental dental research lie deeply rooted in these questions, and with our present concept of dental education, is it really possible to effect significant changes with already over-crowded timetables? If not, and it is considered desirable to pursue intellectual development more diligently, then educators alone cannot elect to bring about the changes which would affect the practice of dentistry so profoundly. The expanded role of auxiliaries as 'therapists' is likely to be of greater necessity in such a concept than for the major reasons put forth at the present time.

The Commissioners suggest that there is need for a change in the concept of dental practice, and therefore in teaching, so that the effectiveness in practice can be increased, possibly through the use of auxiliaries and that

"dental education today needs the stimulation of experiment and new ideas".⁷

For the practice of tomorrow, greater emphasis must be placed on the application of the basic sciences, oral diagnosis, periodontics, training in hospital administration, practice management, and the use of auxiliaries.

It was somewhat surprising to find that even more stress was not placed on the necessity for advanced education in dentistry. It is certain that if only a small proportion of all the recommended developments should take place within the profession, the necessity for graduates to avail themselves of opportunities to keep abreast of the times would increase dramatically. The percentage of dentists in Canada who now take advantage of postgraduate and refresher courses is insignificant, a fact which ought to be disturbing to the public if not the profession itself. True, there is a small corps who repeatedly attend scientific sessions at conventions and offer themselves to the universities for further study, but in a profession in which the members are essentially isolated from one another in practice, there can be little doubt that the requirement of continuing education is paramount.

Implementation of the recommended changes in the dental curricula depends to a very large degree on the number and quality of the teachers. As in the United States, it is true in Canada that the teaching loads have been so heavy that "there is little time left for intellectual development".⁸

Commission studies report a

"positive correlation between the percentage of faculty members of a school on part-time appointment and the dissatisfaction of the students with the quality of instruction".⁹

but a hasty conclusion should not be reached. An extremely valuable, indeed essential, contribution is made by the part-time teacher. The findings, however, do support the recommendation that part-time teachers should be devoting more than a token number of hours to teaching, and that even more, many more, and better qualified full-time teachers are required.

Teachers of the past deserve a great tribute for their devotion and sacrifice in that so much has been accomplished in dental education with such meagre financial support. A great deal of money will be required, not only for additional needs but to strengthen the support of already existing schools. The Commission has estimated that exclusive of capital costs, the cost per student by 1975 should reach a realistic average of \$5,000 per student per annum. Related to existing Canadian schools, this means an annual appropriation of over six million dollars. Figures are not now available for present allocations to the dental schools, but it is unlikely that the actual figures are anything in excess of half of this amount. If to this figure is added the capital cost of new facilities of 15 to 20 thousand dollars per student, and the cost of operating such new schools, it becomes more than ever apparent that the cost of dental education in Canada, over the next ten years, quite realistically should reach very substantial sums of money, and that, as is recommended for the United States, the federal government may have to be asked to make the major contributions to this end.

No more than a passing comment has been made regarding the highly important subject of research, which must be coupled with dental education, because this subject is dealt with in a separate report on the American survey, but certainly dental education and dental health will stagnate without major development in this area.

One gathers the impression that the programs of dental education in the Canadian schools are not influenced to the same degree by the requirements of licensing agencies, which, in the opinion of the authors appears to be a good thing, but the profession must never fail in its obligation to oversee the teaching programs without being too restrictive in its demands. The Commission states that:

"licensing dentists without the typical state board examination may seem idealistic, but it would eliminate the many criticisms of present practices and would be an advancement of great credit to the dental profession. It should be the profession's goal over the next ten or fifteen years".¹⁰

With this stated objective, it is likely that most dentists in Canada would agree. There are, however, certain difficulties preventing immediate implementation, but these should not be insurmountable.

Commenting on the "very satisfactory results" of the national examinations in Canada, the Commission has not been made aware of the exact facts when they state that the certificate from the National Dental Examining Board of Canada "is accepted by the ten provinces without clinical examinations".¹¹ While in practice, most provinces do not require clinical examination, the prerogative exists and indeed is exercised in some areas.

The Commission states that:

"dental examiners and many members of the profession will not move quickly to the support of a national system of licensure until the accreditation of dental schools is strengthened".¹²

If it is intended that such a national system would not require further examination even of graduates from 'recognized' schools, it is likely that most Canadian dentists would agree. This should not be interpreted as a criticism of the excellent work which our national accrediting agency has been doing, but rather a suggestion that they should be given time to develop further the excellent service which they are rendering both to the schools and the profession.

The foregoing observations are not intended nor expected to do justice to the report, which ought to be on the required reading list of every member of the profession in Canada, but rather to underline some of the more significant areas requiring attention. It may be that few of the ideas are new, but factual evidence has been gathered and presented to support previously held impressions, and the problems facing the profession of dentistry on this continent are stated in such a way as to provoke and challenge more energetic attempts at solution.

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2. Ibid. p. 81.
3. Ibid. p. 83.
4. Ibid. p. 267.
5. Ibid. p. 274.
6. Ibid. p. 341.
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10. Ibid. p. 400.
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DENTISTRY IN THE NEWS

The Association

ASSOCIATION MAKES PRESENTATION TO ROYAL COMMISSION ON HEALTH SERVICES

President William Miller, secretary Don W. Gullett, Miss B. I. Boyd, director of the Bureau of Economic Research, R. Langlois, J. D. McLean, W. G. McIntosh and R. M. Grainger represented the Canadian Dental Association at hearings of the Royal Commission on Health Services held in Ottawa, commencing March 19. The delegation presented the Association's recommendations as contained in a brief submitted prior to the hearings.

Emphasizing the futility of a program based on dental treatment alone, the brief stressed the vital importance of reducing the present magnitude of Canada's true dental needs which "by their very nature defy defeat without widespread application of preventive measures." The brief expressed strong opposition to compulsory treatment for people of all ages and to the introduction of a national dental insurance plan at this time. Advocated instead was mandatory communal fluoridation at an estimated cost of one and a half million dollars. "Dental disease control is to an exceptional degree a matter of personal responsibility. Dental health education is necessary to make people acutely aware of this" the brief continued,

advocating widespread and intensive diagnostic and educational dental public health programs for preschool and school children.

Referring to the scarcity of funds for dental research, the brief noted that "for every \$400 spent on dental treatment only \$1 is spent on research. The amount of money available for research must be increased substantially — eventually to reach approximately \$3 million annually."

Stressing the need for more dentists, the brief urged that new dental schools be established at the University of British Columbia, University of Saskatchewan and Laval University. Another dental school was recommended for Ontario as was expansion of the dental school at Dalhousie University. Training facilities for dental hygienists were recommended at the Universities of Manitoba and Montreal and McGill University and at the four new dental schools. A total cost of \$20 million was envisaged for this purpose. Increased federal grants to universities and better support for dentists preparing for teaching careers were also urged. Gradual removal of university fees with replacement by federal per capita grants of the monies which the dental schools would thereby lose annually and the establishment of a revolving dental student loan fund were further recommendations to encourage more students to seek university admission. Also recommended were measures to promote recruitment of students from rural areas and encourage dentists to establish practices in such areas.

The Association urged that a government grant of \$50,000 be provided in support of operational research to determine the best methods of using auxiliary personnel in pri-

vate practice and public health. Planned training courses for dental assistants and dental technicians, using clinical facilities of university dental schools, and extension of federal-provincial vocational training aid for this purpose were also proposed.

The brief included specific recommendations regarding hospital dental departments, admittance of dental patients to hospitals, out-patient dental clinics and cleft palate centres.

Institution by the provinces of profession-administered dental treatment benefits for all public assistance beneficiaries were recommended at an estimated annual cost of \$6 million.

The federal government was urged to establish machinery to maintain, through annual compilation of dental health data, the dental health index initiated by the Canadian Dental Association.

In order to give impetus to the essential improvement and expansion of dental public health programs, health agencies were urged to adopt dental salary schedules comparable to incomes in private practice.

A limited number of copies of the full brief are available at Association headquarters and copies may be secured upon request to the secretary until the supply is exhausted.

EXECUTIVE COUNCIL MEETS

Members of the Executive Council met at Association headquarters in Toronto, February 5-9. In attendance were president William Miller, M. V. J. Keenan, James Zimmerman, Remy Langlois, P. S. Christie, J. P. Coupland, G. M. Dewis, and secretary Don W. Gullett as well as other Association staff members.

Two days were devoted to a detailed review and approval of the brief prepared by the Canadian Dental Association for the Royal Commission on Health Services.

Other items on the agenda included: 1961 Annual Convention; 1962 Annual Convention and Board of Governors' Meeting; locations of future annual meetings; appointment of J. D. Purves of Toronto as chairman of the 1963 Convention Committee; issuance of certificates to dental organizations celebrating significant occasions in their history and issuance of certificates of appreciation to clinicians and essayists contributing to the Association's annual convention programs; institution of a pilot prepaid dental care plan for C.D.A. headquarters staff; emergency health services; the provision of two awards of \$100 each for winners in the dental field of the annual Canadian Science Fair's national competition; C. D. A. Pension Assurance Plan;

headquarters' expansion; selection of titles for the C.D.A. War Memorial Essay Competition; representation of dentists employed by federal government departments on the Board of Governors; and adoption of the 1963 budget.

The council decided not to pursue the establishment of a legal bureau within the Association at present. Consideration was also given to matters affecting the Bureau of Public Information, the Section on Dentistry for Children, pension plans for dental auxiliaries, review of the policy statement, *Projection of Dental Services*, relations with government agencies, possible establishment of a College of General Practice, establishment of a Canadian fund for dental education, the holding of a National Dental Health Day, national health grants, and the Canadian Conference on Dental Research.

Appointed as representatives of the Canadian Dental Association to other organizations were C. H. M. Williams to the National Cancer Institute of Canada and J. P. Coupland as alternate representative to the (Federal) Emergency Health Services Advisory Committee. It was also proposed that J. Kreutzer be nominated as the Association's representative to the Canadian Council on Nutrition.

COUNCIL ON PUBLIC HEALTH MEETS

The Council on Public Health met at Association headquarters in Toronto, January 24-25. In attendance were council members Marjorie Jackson, C. A. E. McCabe, B. J. O'Meara, A. R. S. Gray and F. McCombie, chairman. Others who attended the meeting were C. W. B. McPhail (Edmonton), A. E. Chegwin (Regina), R. A. Connor (Winnipeg), F. A. Kohli (Toronto), H. K. Brown (Department of National Health and Welfare, Ottawa), Lt.-Col. D. H. Hillier (Royal Canadian Dental Corps), M. G. Shapera (Winnipeg), J. C. Bouillon (Montreal), and G. T. Mitton (Toronto). Also present for parts of the meeting were D. L. Rife (Canadian Society of Dentistry for Children), R. D. Leuty (Canadian Society of Orthodontists), H. S. Grey, A. A. Antoni (C.D.A. Hospital Services Committee), G. Nikiforuk, R. M. Grainger, and other Association staff members.

H. S. Grey, director of Dental Services, City of Toronto, presented a progress report on the survey of undergraduate instruction in dental public health at Canadian dental schools. A final report is anticipated before the summer.

The Council learned that the Bureau of Public Information is developing a fluoridation information kit for use by the Association

library in answering individual requests for such information. This kit will provide, in a white labelled folder, reprints and pamphlets as well as a speech outline to assist dentists who are asked to give talks on fluoridation.

A. R. S. Gray presented a report regarding establishment of a nation-wide dental health day. He recommended that this be delayed until assurance of sufficient personnel (at Association headquarters), finances and enthusiasm is forthcoming.

The Council received a progress report concerning the revision of C.D.A. dental health pamphlets. The Ligue d'hygiène dentaire de la province de Québec is to receive free copies of revised pamphlets translated into French by its representatives. The Council also directed some attention to revision of dental health publications of the Health League of Canada. In addition, the Council is developing information kits to be routinely distributed for guidance to newly appointed chairmen of provincial dental public health committees.

The Council also received a progress report on the national dental health survey. Six provinces have reported concerning surveys completed or under way. R. M. Grainger, who recently attended a World Health Organization meeting in Geneva, stated that it will be necessary to revise the Canadian Dental Association's dental survey manual slightly so as to bring it into agreement with W.H.O. standards.

A. A. Antoni, chairman of the Hospital Services Committee, informed the Council that a survey of dental services in institutions is under way in six provinces. Reports from all provinces are anticipated by early spring. The Council on Public Health is collaborating with the Hospital Services Committee in this matter.

The Council again requested the Executive Council to appoint a committee to discuss with the Minister of National Health and Welfare the establishment of a separate dental health grant within the framework of the federal government's national health grants program, or, alternatively, to achieve improved utilization of existing grants for the development of dental programs, especially for children.

PRESIDENT ON WESTERN TOUR

William Miller of Vancouver, president of the Canadian Dental Association, recently visited dental societies in western Canada. He was accompanied by Secretary Don W. Gullett.

This tour was one of the busiest on record, with eight meetings, all in different cities,

within a nine-day period. Both the president and secretary addressed local dental society meetings, and dental students at Edmonton and Winnipeg as well.

The tour started February 26 at Winnipeg, continuing through Regina on February 27, Saskatoon on the 28th, Edmonton March 1, Calgary March 2, Lethbridge March 3, Victoria March 5 and concluded at Vancouver on March 6. The president and secretary visited eastern centres in November and December.

TV SPOT ANNOUNCEMENTS DISTRIBUTED

A new series of three 60-second films has been distributed to television stations across the nation. The three new films are about Early Dental Care, Diet and Dental Care, and Dental Care and General Health. Each film carries a credit line indicating that the message is brought to viewers by "your television station and the Canadian Dental Association".

The first series of these short television films proved very popular. Hundreds of minutes of public service air time, representing many thousands of dollars, was provided free by television stations from St. John's to Victoria.

As in the first series, the latest series has been made available in both French and English language versions. Release of the current series was timed to meet demands for television material for use on Dental Health Day (March 14) of National Health Week sponsored by the Health League of Canada.

The films were produced by Crawley Films Limited of Ottawa under direction of the Canadian Dental Association Bureau of Public Information and with the assistance of advisers in dental public health.

INITIATE FIRST CANADIAN PREPAID DENTAL CARE PLAN FOR C.D.A. HEADQUARTERS STAFF

Employees of the Canadian Dental Association will be covered by dental insurance, retroactive to January 1, 1962. The plan is similar to the pioneering plan established in 1959 for employees of the Dentists' Supply Company, York, Pennsylvania, and more recently by the American Dental Association for its headquarters staff.

The C.D.A. plan will be operated for full-time employees of the Association and the

wives and children (until 19 years of age) of male employees. The plan will be administered by Canadian Dental Service Plans Incorporated. Benefits include:

1. One examination (including radiographs if necessary) and one prophylaxis each year.

2. Eighty per cent of the reasonable expense for the treatment of any dental disease, defect or injury recommended on a treatment plan after the patient has paid a \$25 deductible in the initial year of coverage and a \$10 deductible in each following year. If there are more than three members in a family, only three deductible amounts are applied. The plan will not pay for any services covered under other insurance or government plans and payments are subject to a maximum of \$200 for an individual or \$500 for a family in the first year, \$300 and \$750 in the second and \$400 and \$1,000 in the third year. "Reasonable expense" is the usual and customary fee or charge for the services rendered and supplies furnished in the area where such services are rendered or such supplies furnished. That is, dental accounts will be paid according to the dentists' usual fees.

3. Orthodontic treatment, which will be subject to an additional annual deductible of \$50 (over and above the standard annual deductible). Benefits will not exceed the individual or family maximum for one year or \$400 for each period of orthodontic treatment regardless of the number of policy years through which such period of treatment continues. Successive periods of orthodontic treatment are covered if separated by at least three years.

4. Fees for the replacement of existing dentures over and above the first \$50 charged by the dentist subject to a two-year waiting period for the first replacement and three years between the subsequent replacements are covered. Loss or theft of dentures are not covered. Benefits for expenses for repairs of dentures or initial provision of dentures are payable as outlined in section 2 above.

Not covered in the plan are cosmetic dentistry, losses as a result of war, and disease, defects or injury as a result of occupation or employment. The Canadian Dental Association will pay for the cost of the covered dental services and the cost of administration of the plan. As the cost of the plan cannot be estimated in advance, the Association has established a fund of \$100 per employee, i.e. \$1,300 to cover costs during the first year of operation. The plan will be carefully reviewed after its first year of operation to permit revision of the stipulated conditions of eligi-

bility, the amount of the fund, the method of administration or the extent of benefits provided.

Initially a group purchase plan for dental care financed by the Canadian Dental Association, it is hoped that after two or three years of operation an Ontario Dental Services Corporation might be in a position to establish premiums for this plan. The Canadian Dental Association could thereafter prepay the cost of dental care for its employees.

Canada and the Provinces

THRONE SPEECH CALLS FOR B.C. DENTAL SCHOOL

In the Speech from the Throne at the opening of the British Columbia legislature on January 5, it was announced that the legislature would be asked "to authorize expenditures leading to the establishment of a Faculty of Dentistry at the University of British Columbia." The announcement was not explicit about immediate steps to be taken.

Several years ago when the shortage of dentists became acute, especially in rural areas, the Council of the College of Dental Surgeons of British Columbia began to study the advisability of pressing for a dental school on the university campus. Prospective students were forced to seek admission to universities which were loath to accept many from other provinces. Pre-dental students at the University of British Columbia were often discouraged over the difficulty of obtaining dental training and this caused many to transfer to other faculties. Different outside organizations and provincial newspaper editorials have repeatedly urged the founding of the required dental school.

Then in 1955, J. B. Macdonald was appointed consultant in dental education to the University of British Columbia. His *Prospectus on Dental Education*, published in 1956, recommended that a dental school be established to graduate forty dentists and twenty dental hygienists each year. In the summer of 1961, Dr. Macdonald returned to Vancouver in order to revise and bring up to date his previous report.

Also working toward the establishment of a dental faculty has been a three-member

committee of the College of Dental Surgeons of British Columbia composed of C. R. Hallman, L. W. Beamish and E. J. Sutherland, chairman.

XI PSI PHI FRATERNITY PLANS VANCOUVER MEET

A dinner meeting has been planned for members of Xi Psi Phi Fraternity who will attend the annual meeting of the Canadian Dental Association at Vancouver this year. The dinner will be held on Tuesday, June 5. Further information may be obtained from H. R. Turner, president of the British Columbia Chapter, Xi Psi Phi Fraternity, 1136 Tall Tree Lane, North Vancouver, British Columbia.

ALBERTA

Highlights from the Alberta Dental Brief to the Royal Commission.—Following are the major recommendations recently submitted to the Royal Commission on Health Services by the Alberta Dental Association:

1. Dental Health Education.—Conversion of the part-time position of Director of Dental Public Health to a full-time basis; more rigid control over commercial advertising relating to dental health; inclusion of dental health teaching at all grade levels in all schools; increased use of press, radio and television for dental health education; and assistance to voluntary organizations promoting dental health.

2. Prevention.—Adjustment of the fluoride level in all fluoride-deficient communal water supplies; and dissemination by all levels of government of factual information specifically related to fluoridation.

3. Treatment Services.—Expansion of the Pensioners' Treatment Service Program, administered by the Alberta Dental Association on behalf of the provincial government, to include ultimately all social welfare dental care; further investigation, development and promotion of prepaid and postpaid plans for dental care under the direction and guidance of the dental profession; extension of the availability of dental auxiliaries to dentists in private practice; establishment of a train-

ing program for dental assistants within a vocational school; critical review of the existing program of scholarships, awards, grants and low interest loans to high school and undergraduate students; an expanded recruitment program with emphasis on students from rural areas and female students; an increased number of dental appointments to hospital staffs; availability of hospital beds for patients requiring hospital dental treatment; provision of facilities for general dental care in active treatment and large chronic illness hospitals; and the provision of all dental health services under the supervision or direction of a fully qualified dentist who shall assume full responsibility.

4. Research. — Increased financial support by all governments for research related to dental health; a study by provincial governments to determine the needs and actual demands for dental health services of the various provinces' total population; and greater incentives to attract dentists to careers of research and teaching.

Edmonton Fluoridation Council Brief to Royal Commission.—A brief recently submitted by the Edmonton Fluoridation Council to the Royal Commission on Health Services made these recommendations:

1. That in order to ensure maximum conservation of Canada's economic resources, the initial use of taxpayers' money for the improvement of dental health should be where it will have maximum benefit, namely in the field of prevention, through (in order of importance): (a) fluoridation where community water systems exist, (b) individual fluoride administration where no community water system exists, and (c) public health education about fluoridation.

2. That no government-sponsored prepaid program for dental services be instituted until every possible method of prevention has been put into effect.

The brief was presented by three members of the Edmonton Fluoridation Council executive: Mr. W. F. Macallister, Dr. G. V. T. Clarke and Dr. C. R. Castaldi, council-president.

Use of Oral Health Certificates for Dental Mechanics Clarified.—Oral health certificates have been sent to registered dental mechanics in the province of Alberta. The person seeking the services of a certified dental mechanic obtains the certificate from him and takes it to a medical or dental practitioner. The certificate provides for description of the oral condition and certification that the mouth is "in a fit condition" to receive a

complete upper or complete lower denture or both.

Commenting on the responsibilities of the dentist, the legal consultant to the Alberta Dental Association recently stated: "A dentist who examines a patient's mouth to satisfy himself that the mouth is in a fit condition to accept dentures, and who thereafter prepares and inserts the dentures, is liable for resulting damage only if he does not exercise reasonable care; but a dentist who issues a certificate that a certain state of facts exists, not merely as a matter of opinion but as a matter of fact, may be held responsible even for a condition which he would not have discovered by exercise of reasonable care . . . It appears that if any fee is charged there would be a liability resting upon the dentist who signs the certificate of oral health, and it may be that the liability exists without a fee being charged.

The Alberta Dental Association has therefore advised its members to exercise great care in making the necessary examinations before signing a certificate. Radiographs should be taken and all possible skill used in interpreting such radiographs. Dentists should not sign certificates to enable mechanics to place immediate dentures. Furthermore, certified dental mechanics are not permitted by law to place partial dentures.

or four operating rooms, obviously with the intention of having one or two occupied by hygienists at a later date.

Some of the arrangements of office equipment were quite different from the conventional. For example, in many offices the cuspidor was eliminated and its place taken by a vacuum unit.

During the morning, 19 dentists described the layout of their offices and seven table clinics were presented. In the afternoon, using the facilities of closed circuit television, the highlights of fourteen chair and table clinics were scanned by a roving camera, thereby providing a continuous program survey. This proved to be really necessary as the groups around the clinics were densely packed.

At the luncheon meeting conducted by the president, C. W. Gardner, the regular business was transacted and then a presentation was made by W. P. Munsie on behalf of the dental profession of British Columbia to Dr. G. F. Amyot, retiring provincial deputy minister of health. In reply Dr. Amyot praised the dentists of British Columbia for their efforts in establishing preventive clinics, in welfare work, and in promoting a dental faculty at the University of British Columbia.

MANITOBA

BRITISH COLUMBIA

Certification of Specialists.—Successful in the recent specialty certification examinations conducted by the Council of the British Columbia College of Dental Surgeons, were: Paedodontics—C. R. Braaten, H. W. Helm, E. J. Hyde, G. M. Jinks, D. B. McDonald, M. Nacht, R. J. O'Neil; Periodontics—D. A. Anderson, G. L. Plant, E. R. Nordin; Orthodontics—Peter Bokstrom, R. E. Cline, C. E. Craig, A. A. Fraser, A. M. Hayes, E. A. High, W. D. Kirstine, J. G. Ryan, K. M. Walley; Oral Surgery—J. A. Folkins, R. K. Lindsay, S. F. Miles, P. L. Rondeau, F. A. Smith, A. E. Swanson, Bruce Taylor.

Vancouver Home Talent Day.—The Vancouver and District Dental Society held its home talent clinics on February 3. New trends in the equipment of Vancouver dental offices were demonstrated by means of coloured slides accompanied by the comments of dentists whose offices were pictured. There were many innovations that even a few years ago were not envisioned. Some offices had three

Winnipeg Dental Society.—A meeting of the Winnipeg Dental Society was held on February 19 at the Royal Alexandra Hotel. The guest clinician was R. D. Haryett, director of the Orthodontic Division of the Faculty of Dentistry, University of Alberta.

Dr. Haryett's topic was "The Role of the General Practitioner in Preventive and Intercepting Orthodontics". The speaker dealt with growth and development, diagnosis and treatment planning, and presented illustrated case histories with an evaluation of simple appliances which could profitably be utilized in the office of the general practitioner.

A short business meeting was also conducted.

President's Visitation.—The annual visitation of the president and secretary of the Canadian Dental Association was highlighted by a dinner meeting on February 26.

C.D.A. president William Miller was introduced by the president of the Manitoba Dental Association, F. W. Jones.

Dr. Miller briefly reviewed the history of the dental profession, pointing out that public awareness was now creating greater demands. "Dentistry now stands at a crossroad, with a public demand for socialization of all health services," Dr. Miller added.

He also summarized the problems and pitfalls inherent in this public demand. These include the problems of personnel — adequately trained and used; the problem of administration—stressing the fact that administration should rest mainly in the hands of the profession; and the maintenance of a high quality of service.

Dr. Gullett reported on the hearings of the Royal Commission on Health Services. He described the composition of the Commission, its functions aside from the public hearings, and the studies commissioned to investigate specific areas of interest.

Dr. Gullett pointed out that the final report will be based mainly on these findings and cannot be expected before the end of 1963 or early in 1964.

In hearings to date certain areas of discussion have recurred again and again:

1. The source of funds to pay for proposed health schemes.

2. The question of a compulsory versus a voluntary health plan.

3. Administrative responsibility for the operation of any plan.

In Dr. Gullett's opinion, the Commission would appear to be finding that the demand for a compulsory plan is not nearly as widespread as anticipated.

ONTARIO

Toronto Endodontic Study Club. — H. G. Poyton, professor and head of the Department of Radiology, Faculty of Dentistry, University of Toronto addressed members of the Toronto Endodontic Study Club at a meeting on February 21.

In his address entitled "Radiology in Endodontics" Dr. Poyton stressed the need for good and rapid radiographs in respect to endodontic treatment and results. He showed radiographic evidence of faults in treatment and susceptibility to apical inflammatory reaction in single and multiple teeth.

With the aid of excellent slides the speaker indicated points of differential diagnosis in interpreting conditions exhibiting absence of the lamina dura, widening of the periodontal membrane, and radiolucency in the apical region of the tooth. Dr. Poyton also discussed the radiographic appearance of periapical structures in the presence of certain diseases and malignancies, and stressed the importance of the endodontist recognizing these conditions.

Thunder Bay Dental Association.—The following officers were recently elected to the 1962 executive of the Thunder Bay Dental Association: S. P. Smith of Port Arthur, president; H. A. Dodick of Fort William, vice-president; W. W. Dowhos of Port Arthur, secretary; and A. E. Ward of Port Arthur, treasurer.

QUEBEC

New Provincial Associate Editor Named.—R. W. Faith of Montreal was recently named an associate provincial editor of the *Journal of the Canadian Dental Association* for Quebec. He succeeds A. J. Schutz.

Dr. Faith graduated from the Faculty of Dentistry, McGill University in 1958. Following a year's rotating internship at the McGill University Hospitals, Dr. Faith proceeded to Tufts University, Boston in 1959 for graduate training in orthodontics. Since his return to Montreal in 1961 Dr. Faith has engaged in part-time orthodontic practice and half-time teaching as assistant professor and chairman of the Department of Orthodontics, McGill University.

Montreal Dental Club.—A regular monthly meeting of the Montreal Dental Club was held in the Queen Elizabeth Hotel, February 12. F. O. Frederick, the president, was in the chair.

This meeting took the form of an open discussion on matters relating to the proposed brief to be presented by the club to the Royal Commission on Health Services. A committee comprising A. L. Cameron, H. T. Oliver and E. A. Bourke, chairman, are drafting the brief.

Following the meeting a film on root canal therapy, showing the use of the streptococcal enzymes streptokynase and streptodornase (*Varidase*, Lederle Laboratories) was shown. The film was produced by the Lederle Division of Cyanamid of Canada Ltd.

Canadian Dental Schools

UNIVERSITE DE MONTREAL

Dental Faculty Secretary Named.—Recently appointed to the newly created position of secretary of the Faculty of Dental Surgery, Université de Montréal is Gérard DeMontigny of Montreal. Dr. DeMontigny is professor and head of the Department of Oral Surgery at the dental school as well as French editor of the *Journal of the Canadian Dental Association*. In his new appointment Dr. DeMontigny now assumes certain additional administrative responsibilities, particularly in relation to the operation of the various clinical departments at the university's dental school.



gerard DeMontigny

UNIVERSITY OF MANITOBA

Dental School Expansion Recommended to Royal Commission.—A \$3.5 million program to provide an integrated and expanded system of dental treatment and research was recently proposed by the University of Manitoba's Faculty of Dentistry to the Royal Commission on Health Services.

According to the *Winnipeg Tribune*, the Faculty recommended expansion of dental and pre-dental teaching facilities costing \$1.7 million and other improvements amounting to \$1.1 million.

The Faculty made these two basic recommendations:

1. More and better educated, trained and integrated dental practitioners, teachers, research workers, dental hygienists, dental assistants and laboratory technicians.

2. Increased support for research and basic and clinical dental sciences.

It was proposed that two ten-thousand square foot wings be built at the University of Manitoba, one for teaching and the other for research.

The Faculty reportedly urged that training of dental assistants and technicians be established on a more formal basis under a recognized teaching institution. Dental trainees would thereby be taught to work with other levels in the profession and practising dentists would be given special courses. This would increase the efficiency of present facilities at low cost.

UNIVERSITY OF TORONTO

Faculty holds successful "Open House". — The following comments appeared in three letters from different sources following "Open House" at the Faculty of Dentistry on February 11:

"The tour of the School of Dentistry increased my respect for this profession; it certainly was a striking example of the progressive steps it is taking.

"I think this Faculty stands as a symbol of progress in medical science—an institution that we, as Canadians, can present as a challenge to the rest of the world.

"It was my pleasure to provide the transportation for five students to visit the Faculty of Dentistry building. They all reported having seen and heard much to their advantage on their tour and were impressed with the careful organization, the graciousness of the instructors (students) and the opportunities available for learning in the field of dentistry."

Research Grant from Lever Brothers Limited.—The Division of Dental Research has received from Lever Brothers, Limited a research grant extending over a three-year period. This grant will support biochemical studies relating to dental calculus and associated problems. A small sub-committee established in the Division of Dental Research will guide this project with R. C. Burgess as the chief investigator.

Projection of Registration for Session 1962-63.—The faculty executive committee recently approved the following projection of registration for session 1962-63: preprofessional year 115, first dental year 124, second dental year 120, third dental year 114, fourth dental

year 124, first year—Dental Hygiene 45, second year—Dental Hygiene 38.

Dental Faculty Museum Fund. — The Ontario Dental Association recently contributed \$4,000 to the Faculty for immediate use in refurbishing, cataloguing and displaying the Faculty's extensive collection of museum material. This timely financial support will facilitate the efforts of J. H. Johnson, curator, in establishing in the Faculty a museum to portray the history of dentistry.

Royal Canadian Dental Corps

BRIGADIER BAIRD TO MIDDLE EAST

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces departed from Uplands Airport, Ottawa by R.C.A.F. "Comet" on February 26 to inspect the dental facilities and interview personnel of the R.C.D.C. Detachment, Canadian Base Units, Middle East. Recent restrictions on "foreign" aircraft landing in France made it necessary for the Director General to be routed through Keflavik, Iceland; Bad Solingen, Germany; Pisa, Italy; Athens, Greece; and then to El Arich.

The trip, approved by the Commander of the United Nations Emergency Force, will afford the Director General the opportunity to see at first hand the functions of the Force and to discuss the problems associated with the provision of dental treatment to Canadian troops in this area. Major E. J. C. Small, the officer in charge of the Dental Detachment, C.B.U.M.E. and Senior Dental Officer UNEF, accompanied the Director General to the various locations where Canadian personnel are serving.

CHICAGO MID-WINTER MEETING

Colonel G. B. Shillington, Deputy Director General of Dental Services attended the annual Chicago Mid-Winter Meeting, February 19-20. He was joined in Chicago by Majors J. L. Craig and J. J. N. Wright, dental officers on the staff of the R.C.D.C. School.

DENTAL OFFICERS ON COURSE

Major J. W. Jelly, Senior Dental Officer at Fort Churchill, Manitoba attended the two-week course in Oral Surgery at Ent Air Force Base, Colorado Springs from February 5-16. This course, conducted by the eminent oral surgeon, W. W. Cogswell, has proven to be most beneficial to selected senior dental officers of the Corps.

THE ROYAL CANADIAN DENTAL CORPS SCHOOL

The following dental officers recently attended a five-week Casualty Care and Officers Clinical Course at the Corps School, Camp Borden, Ontario: Major J. A. Lauziere; —R.C.A.F. Station, Winnipeg, Manitoba; Major H. R. Kettys—Currie Barracks, Calgary, Alberta; Major P. H. Guevremont—R.C.A.F. Station, St. Jean, P. Que.; Major D. J. Carmichael—H.M.C.S. Naden, Esquimalt, British Columbia; and Major J. McGaughey—H.M.C. Dockyard, Halifax, Nova Scotia.

It was a privilege and pleasure to have two American dental officers in attendance at this course: Major Wallace R. Baze, U.S. Army Dental Corps and Lt. Cdr. Henry Muller III from the U.S. Navy Dental Corps.

LT.-COL. HILLIER GUEST LECTURER

Lieutenant Colonel D. H. Hillier of the Directorate Staff presented a series of lectures on "Clinic Management" to the officers attending the March-April Clinical Course at the R.C.D.C. School.

Public Health

CORNWALL, ONTARIO, FLUORIDATES

On February 13, the city of Cornwall in northeastern Ontario joined the list of Canadian communities fluoridating their communal water supplies. The city filtration plant had previously tested its new equipment for

about a week, and no unfavourable reaction occurred.

FIVE YEARS' ACCOMPLISHMENTS LISTED BY QUEBEC DENTAL HYGIENE LEAGUE

A recent report by Ephrim Vinet, administrator-secretary-treasurer of the Dental Hygiene League of the Province of Quebec summarizes that organization's accomplishments since September 1955. An extensive program of lectures and distribution of literature was directed at student teachers, adult organizations and school children. Press, radio and television media were effectively used in connection with these efforts.

In 1961 the League undertook responsibility for the Quebec portion of the Canadian Dental Association's national dental survey and the province of Quebec submitted the first provincial report concerning this survey. A similar survey of schools was performed in 1961 at the request of the City of Montreal North.

More recently the League was approached by the dental consultant to the Department of National Health and Welfare with a view to

undertaking an investigation into the effectiveness of a new method of topical fluoride application.

Several English dental health pamphlets have been translated into French by the League's personnel. Additional pamphlets have been prepared at the request of the College of Dental Surgeons of the Province of Quebec.

Lectures by staff members are in considerable demand, having been requested by the School of Hygiene of the University of Montreal, by several dental faculties, L'Association des Medecins de Langue Française du Canada, the Canadian Public Health Association, the Voluntary Committee on Health of the Senate and House of Commons, the Canadian Association of Sanitary Inspectors, the Canadian Cancer Society, the Health League of Canada, and the various dental societies of the province of Quebec.

The work of the League has received international recognition, several staff members having been honoured by the International College of Dentists, the American College of Dentists, the Royal Society of Health, the American Association for the Advancement of Science and the American Public Health Association.

Summary of activities of the Dental Hygiene League of the Province of Quebec since September 1955.

Student teachers	Lectures delivered	2,885
	Teachers' colleges where lectures were delivered	689
	Audience	29,785
Adult education	Service clubs, community organizations and municipal councils	498
	Audience	34,229
	Televised programs	174
Mass media	T.V. channels used	8
	Radio programs	2,845
	Radio stations used	27
	Press releases	2,473
	Collaborating newspapers	159
	Press conferences	5*
Literature distributed	Manuals and lecture summaries	33,790
	Other printed matter	650,598
	Lectures and motion picture demonstrations	322
Education in schools†	Audience	143,452
	Communities benefited	189
	Interviews	14,134

* Two in Montreal, one in Quebec City and two in Sherbrooke

† In collaboration with the Montreal health department

**FLUORIDATION IN BRITISH
COLUMBIA AND SASKATCHEWAN**

British Columbia's municipal elections last December were accompanied by fluoridation plebiscites in six communities. Kamloops voted by 61 per cent in favour of fluoridation. The remaining five communities failed to achieve the necessary majority, but one of these, Powell River, had a substantial decrease in the "no" vote.

In 1961 twelve more Saskatchewan communities began adjusting the fluoride content of their water supplies, according to the Department of Public Health. Thus twenty-six cities and towns in Saskatchewan with a total population of 207,983 now fluoridate their municipal water supplies. Including Indians, most of whom do not have access to piped water supplies, this is 23 per cent of the total population of the province. Uranium City, a northern mining town, which recently voted in favour of fluoridation, will likely be the twenty-seventh community to join the ranks of those using water with fluorides added. Several areas have water supplies with sufficient fluorides naturally present in the water.

**NATIONAL HEALTH WEEK
MARCH 11 - 17**

Canada's eighteenth annual National Health Week, sponsored by the Health League of Canada, was observed March 11-17, 1962. Wednesday March 14 was designated Dental Health Day.

Recognizing that "health is everybody's business", the League sponsors National Health Week with the co-operation of departments of health and education and many other organizations across the country. The week represents a co-ordinated effort to call to the attention of the Canadian people the necessity for promoting and conserving health by all possible means. Radio, television and newspapers co-operated to give extensive publicity to health matters during health week.

On Dental Health Day, the children's television program "Romper Room" again this year carried dental health talks by dentists and other features. Children appearing on the program were given toothbrushes with instruction in their proper use.

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**61st Annual Meeting
Canadian
Dental Association
June 3-6, 1962**

**61e Congrès Annuel
L'Association Dentaire
Canadienne
Le 3 au 6 juin, 1962**

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

ONTARIO FLUORIDATION INVESTIGATING COMMITTEE REPORT

To the Editor:

With reference to Dr. S. W. Leslie's letter in the Correspondence Section (J. Canad. D.A. 28:49, January 1962), it is to our amazement that a man of his academic qualifications would express an opinion, "I would like to go on record as saying that it is not necessary to fill with fillings of durable nature deciduous teeth", which is so completely at variance with the teachings of all recognized dental schools.

The Canadian Society of Dentistry for Children takes strong exception to such an irresponsible attitude.

C. D. Beierl, D.D.S.,
President,
Canadian Society of Dentistry
for Children.

A CHILDREN'S DENTAL HOSPITAL

To the Editor:

I wish to draw attention to the deplorably inadequate dental treatment facilities for underprivileged children (in this city). All of us who have contributed our services to the

various hospital out-patient clinics know how great the need is. Where treatment is being rendered, only surgical and operative procedures are being carried out. Such clinics are tucked away in small corners of hospitals or public institutions. Furnished in many instances with obsolete dental equipment, these clinics can only handle very small patient loads. All too often the dentist is not accorded the professional status enjoyed by members of the medical staff of such institutions. The teaching clinics connected with university dental schools, the only other public dental facilities, can only handle a relatively small number of children.

The public is generally unaware of the scanty available facilities, so that the majority of children from families of lower economic levels must forego dental care. These children are discriminated against because of poverty. Certainly, they cannot aspire to more sophisticated forms of treatment such as orthodontic and prosthodontic care.

Government has recognized the need in this area. The dental profession fears the possibility of "socialization". But there are steps that we can take to maintain the autonomy of the profession and improve the level of oral health at the same time. The proposal which I advocate is limited to children in order to create a new generation that is better educated about its dental needs and oral care, and whose mouths are in a better condition.

We (in this city) should build a children's dental hospital capable of providing a full range of dental care and furnished with adequate research facilities. The Eastman Dental Clinic at Rochester, New York and the dental clinic of the Albert Einstein Medical Centre (Northern Division) in Philadelphia are examples of this kind of institution. Such a hospital could be staffed by postgraduate students on an intern and resident basis, as well as by an attending staff of practising and teaching dentists. The attending staff would be granted limited admitting, operating room and hospital privileges, as well as being provided with facilities for research. The hospital could be divided into specialty services or departments, with one department de-

voted to the complete treatment of handicapped children.

A social service centre in the hospital would investigate all children seeking admission and categorize each patient in terms of ability to pay a percentage of the fee.

The research area would be open to post-graduate students on affiliation from the university dental schools as well as to attending staff dentists interested in research programs. The research laboratories would be co-ordinated with clinical research projects conducted elsewhere in the hospital.

Fund raising for the purpose of endowing this institution should be initiated by the production of a motion picture which graphically depicts dental neglect in children. Most adults would be moved at the sight of a child whose health is being undermined in

this way. A group of dentists acting as campaigners could show this film to service organizations and philanthropic groups, explaining the present shortage of clinical facilities and demonstrating what Rochester, Philadelphia, and other cities have done to remedy the problem.

How would such a hospital affect private practitioners? Firstly, it would help stave off the socialization of dentistry. It would elevate the level of dental knowledge and standards of practice. It would attract teaching and research personnel. And, most important, it would create a greater appreciation for good dental care in private practice.

Hershel Bernstein, D.D.S.,
5757 Decelles Avenue,
Montreal, P. Que.

BOOK REVIEWS

PEDIATRIC DENTISTRY

M. M. Cohen, St. Louis, C. V. Mosby Co.,
1961. 507p. Illus. \$15.00

The second edition of Cohen's *Pediatric Dentistry* is a noteworthy achievement. An excellent group of collaborators have been assembled, covering the whole spectrum of paedodontic interest. Sicher on embryology, Brodie on cephalometry, Shaw on nutrition and Album on the handicapped child are examples of the quality and breadth of the text. Cohen contributes much in his chapters on operative dentistry, endocrinology and prophylactic orthodontics. However, the chapter on operative dentistry quite empirically discarded calcium hydroxide as a pulp capping material and substituted a material that the author had evaluated only on a clinical basis. The chapter on prophylactic orthodontics is too superficial.

The references at the end of each chapter

are very extensive and useful to the student and have been augmented in this edition. However, the text does not always reflect its own reference material. The format of the second edition is a marked improvement over the first edition. This is a well illustrated and handsome reference text.

W. H. Feasby

TECHNIQUE AND TREATMENT WITH THE LABIO-LINGUAL APPLIANCE

B. W. Tarpley, St. Louis, C. V. Mosby Co.
1961. 202p. Illus. \$10.50.

In presenting this new text, the author states a two-fold purpose: (1) to help in the training of orthodontists and (2) to serve as a guide to those orthodontists who are using the labial-lingual appliance. The book is

divided into two sections. The first seven chapters deal with a detailed description of the construction of the appliances, commencing with the fitting of the anchor bands, the shaping and fitting of the arches and the attachment of auxiliary components. A special chapter is devoted to the construction and use of the guide plane in treatment.

In the second section, chapter 8, are presented typical cases of malocclusion. The details of treatment and results achieved are all well illustrated by dental and facial photographs.

G. V. Fisk

TECHNIQUE AND TREATMENT WITH THE TWIN-WIRE APPLIANCE

E. E. Shepard. St. Louis, C. V. Mosby Co., 1961. 159p. Illus. \$10.50.

This new book sets forth in concise form the basic principles of the twin wire appliance and its application to the treatment of all types of malocclusion. While it is designed chiefly as an undergraduate textbook, the

general practitioner of dentistry or the orthodontist would find it valuable as a reference book.

The opening chapter on "Orientation" outlines in a concise manner the treatment potentialities of the appliance. In chapters 2 to 4 are presented, under the heading "Appliance Mechanics", the fitting of bands, fabrication of the appliance, cementation of the bands, and the initial insertion of the appliance in the mouth. In chapters 5 and 6 the clinical application of the twin-wire appliance in non-extraction and in extraction cases is effectively discussed. The ligation technique for the management of unerupted and impacted teeth is described in chapter 7 while in chapter 8 the surgical treatment of the maxillary fraenum labii is advocated. The steps employed in the treatment of three adult cases are detailed in chapter 9, and in the final chapter three cases are presented where twin-wire therapy was employed to correct malocclusion in the deciduous dentition. Throughout the book there has been a generous use of photographs and diagrams to amplify the text which has been kept to a minimum.

G. V. Fisk

ADDITIONS TO THE LIBRARY

ANSON, T. V. The New Zealand Dental Services: official history of New Zealand in the Second World War 1939-1945. Wellington, R. E. Owen, 1960. 422 p. illus. \$4.75

BENSON, H. J. and KIPP, K. R. Dental science laboratory guide. 3rd ed. Dubuque, Iowa, Wm. C. Brown Co. Pubs., 1961. 139 p. illus. \$2.75

EUROPEAN ORTHODONTIC SOCIETY. Report of the 36th Congress held at the David Keir Bldg., The Queen's University, Belfast, Northern Ireland, 30th June—5th July 1960. The Hague, Holland, Albani, 1961. 390 p. illus. \$10.50

HEALTH INSURANCE INSTITUTE, New York. Source book of health insurance data. 1961. 80 p.

W. K. KELLOGG FOUNDATION. Annual Report 1961. Battle Creek, Michigan. 168 p. illus.

KIM, M. S., RINGSDORF, W. M. Jr. and CHERASKIN, E. Factors in denture tolerance. Practical Dental Monographs, January 1962. 64 p.

MARTI-IBANEZ, F. A prelude to medical history. New York, MD Publications, Inc., 1961. 253 p. \$5.75

U.S. LIBRARY OF CONGRESS. BIBLIOGRAPHY SECTION. Bibliography on saliva compiled by Bibliography Section, Science and Technology Division, Library of Congress, March 1960. Washington, Office of Naval Research. 1960. 447 p. \$3.00

IN MEMORIAM



Ashley & Crippen

E. W. McHenry

EARLE WILLARD McHENRY—The dental profession mourns the loss of one of the most outstanding authorities in the very closely allied discipline of nutrition. Dr. E. W. McHenry's death on December 20, 1961 came as a great shock to his colleagues and friends and sympathy is expressed to Mrs. McHenry and his family at the untimely passing of a devoted friend of dentistry. Born in Streetsville, Ontario on January 25, 1899, Dr. McHenry moved with his family to London, Ontario where he received his primary and secondary school education. His search for knowledge subsequently led him to enter the honours course in chemistry at the University of Toronto, where he graduated in 1921. Continuing his education, he obtained his Master of Arts degree in organic chemistry in 1923. It is of interest that the subject of his work for the Master's degree was "Studies in the Composition of Saliva". Thereafter, 1921-1923, he became a lecturer in chemistry at the dental school which operated at that time under the Royal College of Dental Surgeons of Ontario. This association inspired his interest, which remained throughout his life, in the nutritional problems of dentistry as related to the prevention of dental caries and periodontal disease. For four years, Dr. McHenry joined the research staffs of Canadian Cannery Limited and E. R. Squibb and Sons of New Jersey. His real interest, however, was in the academic field and in 1927 he returned to the University of Toronto to join the staff of a newly formed Department of Physiological Hy-

giene headed by Professor C. H. Best, co-worker with the late Dr. Banting. In 1929, Dr. McHenry received his Doctorate of Philosophy in organic chemistry. His association with Professors Miller and Allen of the Department of Chemistry, University of Toronto encouraged him to work in biological chemistry, which led gradually to his recognized field in nutrition at the School of Hygiene in 1946. As a lecturer, Dr. McHenry was widely known to many dentists who have taken their training at the University of Toronto. Many dentists from almost every country in the world have enjoyed his lectures during postgraduate studies at the School of Hygiene, University of Toronto. His ability as a guest speaker on many aspects of nutrition was well-known and resulted in invitations from many dental associations and public health groups planning their convention programs. Internationally he served as Canadian delegate to international congresses on nutrition and travelled widely as nutrition consultant to foundations, governments and councils on nutrition. He became the first president of the Canadian Federation of Biological Societies as a deserved honour for his many activities in scientific organizations in Canada, the United States and Great Britain. As an author, Dr. McHenry leaves a rich heritage with his contributions to the subject of nutrition in the many papers and several books which he has written. As an educator of the public, his spicy comments on health problems imprinted the information he wished to communicate on the

minds of his listeners in a fashion which made his speaking or writing enjoyable as well as most educational. As a personal friend, Dr. McHenry will always be remembered as a delightful and charming conversationalist, a man with many interests, a lecturer and teacher devoted to the cause of Public Health, a research worker of distinction and a man devoted to his home, church and family and to the community in which he lived.

MAURICE BEGIN — Le Dr. Maurice Bégin de Granby, âgé de 50 ans, est décédé le 18 janvier, 1962. Il était né à Windsor Mills, P. Qué. en 1911. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1939.

FREDERICK ROY DAVIS — Dr. Frederick Roy Davis of Toronto, Ontario, died on February 1, 1962. He was 73. Dr. Davis was born in Toronto in 1889. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1913. He is survived by his wife, Mabel.

EDWARD MILLS FULTON — Dr. Edward Mills Fulton of Toronto, Ontario died on January 7, 1962. He was 78. Dr. Fulton was born in Winchester Township, Ontario in 1884. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1905.

PERCY HILL — Dr. Percy Hill of Kirkland Lake, Ontario died on January 11, 1962. He was 62. Dr. Hill was born in Oxford County, Ontario in 1899. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1923. From that time he practised in Cobalt, Kirkland Lake, and finally in Markdale, Ontario. Dr. Hill is survived by his wife, Rose and one daughter, Elizabeth.

HOWARD JOSEPH LAWRENCE — Dr. Howard Joseph Lawrence of Winnipeg, Manitoba died on January 6, 1962. He was 67. Dr. Lawrence was born in Wakopa, Manitoba in 1894. He studied dentistry at

the Royal College of Dental Surgeons of Ontario and graduated in 1923. From that time he practised in Winnipeg. He is survived by his wife, Irene and one sister, Miss Grace F. Lawrence.

J. ALYRE LE BLANC — Dr. J. Alyre Le Blanc of Moncton, New Brunswick died on January 9, 1962. He was 66. Dr. Le Blanc was born in Boutouche, New Brunswick in 1895. He studied dentistry at the Baltimore College of Dental Surgery, and graduated in 1920. He is survived by his wife, Clara; three sisters, Mrs. Edna Dionne, Miss Evangeline and Miss Clara Le Blanc; and two brothers, J. Alphonse Le Blanc of Moncton and J. Régis Le Blanc of Dieppe.

ROBERT JACK MUTART—Dr. Robert Jack Mutart of Hamilton, Ontario died on February 3, 1962. He was 38. Dr. Mutart was born in Niagara Falls, Ontario in 1923. He studied dentistry at the University of Toronto, graduating in 1951. He is survived by his wife, Ann; a son, Bobby; a daughter, Donna; parents, Mr. and Mrs. D. E. Colville of Kapuskasing; a sister, Mrs. Felix Palka (Ruth) of Niagara Falls and grandmother, Mrs. Hattie Stevens of Kapuskasing.

JOHN E. RHIND — Dr. John E. Rhind of Toronto, Ontario died on January 13, 1962. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1900. Dr. Rhind served with the Canadian Dental Corps during the first world war. He was a past president of the Toronto Dental Society and the Ontario Dental Association. He is survived by his wife, Sybil; a son John; a daughter, Mrs. Sylvia Herbinson of King; two sisters, Mrs. Helen Williams and Miss Lottie C. Rhind and five grandchildren.

HENRY STANISLAUS TOLSON — Dr. Henry Stanislaus Tolson of Halifax, Nova Scotia died in January 1962. He was 73. Dr. Tolson was born in Halifax in 1888. He studied dentistry at Dalhousie University, graduating in 1912.

CANADIAN DENTAL ASSOCIATION RETIREMENT SAVINGS PLAN

Statement of Unit Valuation as of February 28, 1962

GOVERNMENT BOND FUND

Investment at market value	\$191,177.36
Accrued income (interest)	775.20
Cash on deposit	24.17
TOTAL	\$191,976.73
Less: Administration fee of $\frac{1}{8}$ of 1% of \$191,976.73	239.96
MARKET VALUE OF FUND	\$191,736.77
Units outstanding	16,679.670
UNIT VALUE OF FUND	\$ 11.495

CORPORATE BOND FUND

Investment at market value	\$338,719.48
Accrued income (interest)	1,458.85
Cash on deposit	52.83
TOTAL	\$340,231.16
Less: Administration fee of $\frac{1}{8}$ of 1% of \$340,231.16	425.28
MARKET VALUE OF FUND	\$339,805.88
Units outstanding	28,008.590
UNIT VALUE OF FUND	\$ 12.132

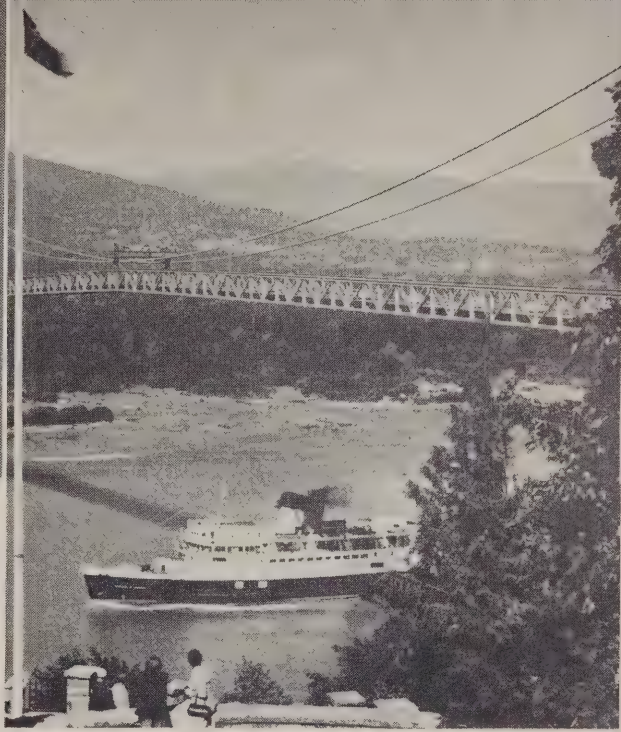
COMMON STOCK FUND

Investment at market value	\$768,358.49
Accrued income (interest)	—
Cash on deposit	—
TOTAL	\$768,358.49
Less: Administration fee of $\frac{1}{8}$ of 1% of \$768,358.49	960.44
MARKET VALUE OF FUND	\$767,398.05
Units outstanding	50,241.615
UNIT VALUE OF FUND	\$ 15.274

Trustee: The Royal Trust Company.

Information about the C.D.A. Retirement Savings Plan is available from Mr. J. T. Staddon, 2249 Yonge Street, Toronto 7, Ont. Telephone HU. 1-5731.

Lions Gate Bridge



G. V. T. Assn.

One of the pleasures awaiting convention participants is a cruise in the coastal waters of the Pacific Ocean aboard a steamship similar to the one seen leaving the harbour in the above photograph. Leaving in daylight passengers will enjoy magnificent natural scenery. Returning in the dark they will see Vancouver's brilliant skyline and harbour with the suburbs lighting up the surrounding mountainsides. During the cruise there will be music, entertainment and refreshments.

CANADIAN DENTAL ASSOCIATION

SIXTY-FIRST ANNUAL MEETING

VANCOUVER, BRITISH COLUMBIA

BOARD OF GOVERNORS' MEETING: MAY 30-JUNE 2

CONVENTION: JUNE 3-6

CONDENSED PROGRAM

In addition to the principal clinicians and essayists, at least fifty table clinics will be presented during the convention. These are all designed to fit into the convention theme, "Dentistry on the Move". A partial list appears below:

Dr. D. B. Deans	Indirect Inlay Techniques
Dr. H. W. Fleege	Full Mouth Survey for the Paedodontic Patient
Dr. J. A. Folkins	Local Anaesthesia
Dr. P. L. Rondeau	Instrumentation for Root Removal
Dr. H. V. Whitcomb	Porcelain Fused to Gold
Dr. D. F. Haselnus	Provisional Splinting and Temporary Bridgework
Dr. D. A. Anderson	Lateral Granulomatous Tissue
Dr. L. E. Ostlund	Complex Amalgams
Dr. E. J. Cassell	Sound in Dentistry
Dr. T. E. Ramage	Indirect Technique for Porcelain Inlays
Dr. J. H. Merrell	Trouble-Shooting and Endodontics
Mr. V. Morris	Reverse Pin Facings
Intercity Paedodontic Study Club	Stainless Steel Crowns
	Rubber Dam for Paedodontic Patients
	Non-Vital Pulpotomy
	Fractured Anterior Teeth
Interceptive Orthodontic Study Club	Interceptive Orthodontics
Crown and Bridge Study Club	Gingival Retraction
Vancouver Paedodontic Study Club	Rubber Dam
	Amalgam Manipulation
Vancouver Occlusal Study Club	Full Mouth Rehabilitation
	1. Use and location of the hinge axis
	2. Mounting the diagnostic models
	3. Taking mandibular records
	4. Setting the adjustable articulator
	5. Full mouth waxing technique
	6. Finished case
	7. Demonstration of factors of occlusion
Vancouver Prosthodontic Study Club	Full Upper and Lower Denture Technique
Vancouver Dental Seminar	Impression Taking for Inlays
	Working Models and Dies
	Bite Registration and Wax-Up
	Fitting and Finishing Inlays
Dental Assistants' Association	Sterilization for Oral Surgery
	An X-ray Technique
	First-Aid in the Dental Office
Dental Hygienists' Association	Role of the Dental Hygienist

REGISTRATION FORM

Annual Meeting

CANADIAN DENTAL ASSOCIATION

BRITISH COLUMBIA DENTAL ASSOCIATION

c/o British Columbia Dental Association
925 West Georgia Street
Vancouver 1, British Columbia

Vancouver, British Columbia

June 3-6, 1962

NAME

ADDRESS

CITY PROVINCE

WIFE'S NAME

Golf — Yes ☐ No ☐

REGISTRATION FEE

Single: \$40.00 Wife: \$10.00

Make cheques payable to: C.D.A. 1962 Convention. Fee includes C.D.A. Luncheon, B.C.D.A. Luncheon, B.C. College of Dental Surgeons Luncheon, Boat Cruise and President's Ball.

Enclosed is cheque No. for \$

HOUSING ACCOMMODATION APPLICATION

(To be completed and returned with the above form)

Please reserve the following accommodation
(Order of choice indicated by 1-2-3 in space provided)

	Single	Double	Twin	Suites
Hotel Devonshire		\$10.50-13.50 ☐	\$12.50-15.00 ☐	\$21.00-25.00 ☐
Hotel Georgia	\$10.00-12.00 ☐	\$13.00-13.50 ☐	\$13.50-14.50 ☐	
Hotel Ritz	\$ 8.50-11.00 ☐	\$11.00-15.00 ☐	\$11.00-15.00 ☐	
Hotel Vancouver	\$10.00-15.00 ☐	\$13.00-19.00 ☐	\$13.50-20.00 ☐	\$29.00 up ☐
Bayshore Inn	\$11.00-13.00 ☐	\$14.00-16.00 ☐	\$15.00-17.00 ☐	\$25.00-65.00 ☐
Georgian Towers	\$ 9.00-13.00 ☐	\$13.00-15.00 ☐	\$15.00-17.00 ☐	
Burrard Motel		\$11.00-13.00 ☐	\$13.00 ☐	
Sands Motel	\$ 9.50-10.50 ☐	\$12.50-13.50 ☐		

Travelling by: Car ☐ Train ☐ Bus ☐ Air ☐

Reservations will be made in order of their arrival. Advanced registration will be very much appreciated. A cheque to cover registration must accompany every application. Hotel accommodation can only be guaranteed until May 15 and on receipt of a cheque. Certificates for reduced rail fare will be made available from C.D.A. headquarters.

**Canadian Society of Dentistry for Children
(Paedodontic Section of the Canadian Dental Association)
Annual Scientific Meeting, June 3, 1962
Queen Elizabeth Theatre, Vancouver, B.C.**

Essayist

Dr. V. A. Nord, Great Falls, Montana — Motivation: the Key to Success

For further information write:

Dr. D. L. Rife, 3014 Bathurst Street, Toronto, Ontario.

**Canadian Society of Dentistry for Children
Ontario Unit Annual Meeting
Sheraton Connaught Hotel, Hamilton, May 12, 1962**

Dr. G. Nikiforuk	The Determinants of Tooth Susceptibility to Dental Caries
Dr. R. Rapp	Oral Problems Associated with Hereditary Ectodermal Dysplasia
Dr. M. J. O'Brien	Drugs: Their Uses and Abuses in Children
Dr. W. Blatz	Children Should Like the Dentist
Dr. J. A. Pedler	Oral Diagnosis in Children

Business Meeting

Luncheon Speaker: Mrs. Charles Linton, Registrar, McMaster University

For further information write:

Dr. D. L. Rife, 3014 Bathurst Street, Toronto, Ontario.

Canadian Academy of Periodontology
(Periodontology Section of the Canadian Dental Association)
Annual Scientific Meeting, Vancouver, B.C., June 3-4, 1962

Essayist: Dr. K. F. Box, Toronto, Ontario

Presentations: Edmonton Periodontal Study Club
Vancouver Periodontal Study Club

For further information write:

Dr. J. W. Neilson, Faculty of Dentistry, University of Manitoba, Winnipeg 3, Manitoba.

Ontario Dental Association
95th Annual Convention, May 13-16, 1962
Royal York Hotel, Toronto

Dr. Ernest Mendeloff	Orthodontics
Dr. Warren Riley	Practice Management
Dr. Arthur Krol	Prosthodontics
Capt. G. W. Ferguson	Silver Amalgam Restorations
Dr. Arthur Elfenbaum	Oral Diagnosis
Col. R. B. Shira	Common Problems in Oral Surgery
Dr. G. C. Hare	Treatment of Fractured Teeth in Children
Dr. Harry Rosen	Crown and Bridge Prosthodontics
Dr. D. S. Moore	Diagnosis and Treatment of Bruxism
Dr. A. W. S. Wood	Paedodontics
Dr. W. W. Pressey	Psychology Related to Dental Practice
Royal Canadian Dental Corps	One-Week Training for Dental Assistants
Dental Public Health Committee	Burlington Orthodontic Research Centre

ANNOUNCEMENT

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
May 12, 1962	Ontario Unit, Canadian Society of Dentistry for Children	Sheraton- Connaught Hotel, Hamilton	Dr. D. L. Rife	3014 Bathurst St., Toronto, Ont.
May 13-16, 1962	Ontario Dental Asso- ciation Convention	Royal York Hotel, Toronto	Mrs. W. C. Durham	230 St. George Street, Toronto 5, Ont.
24-26 mai 1962	Congrès de l'Asso- ciation dentaire de la province de Québec	Hôtel Chicoutimi, Chicoutimi	Dr. J. D. Simard	397 Racine Est, Chicoutimi, P. Qué.
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eaton	Farquhar Bldg., Halifax, N.S.
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20, 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.1, England
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Bldg., Prince Albert, Sask.
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Qué.
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior St., Chicago, Ill.

POSTGRADUATE AND REFRESHER COURSES (CANADA)

ALBERTA—The EIGHTH BIENNIAL FALL REFRESHER COURSE will be offered at the Faculty of Dentistry, University of Alberta, September 4-5, 1962. The main theme will be Periodontics for the General Practitioner.

A postgraduate course in CROWN AND BRIDGE PROSTHODONTICS will be offered at the Faculty of Dentistry, University of Alberta, September 6-8, 1962. This course will cover the fundamental principles of crown and bridge construction, including preparations, indirect methods of crown and bridge procedures, etc. The course will be directed by Dr. D. R. Stewart. Tuition fee \$60.

Enquiries and applications should be directed to the Secretary, Faculty of Dentistry, University of Alberta, Edmonton, Alberta.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

TUFTS—June 17-21, 1962—13th Annual Berkshire Conference in Periodontology (Subject: Occlusion)

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institution

L'Association Dentaire Canadienne.

JOURNAL

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L'attachement épithélial et ses modifications au cours des maladies périodentaires

par PIERRE LABBÉ,* e.e.c.d., Montréal, P.Qué.

Pendant longtemps la relation organique de l'épithélium gingival à l'émail de la dent fut considérée avec un peu de scepticisme. On croyait que l'espace capillaire entre l'épithélium gingival et l'émail s'étendait jusqu'au joint énamo-cémentaire à partir du moment où la dent fait son éruption dans la cavité buccale.

En 1921, Gottlieb découvrait que l'épithélium de la gencive est en relation organique avec la surface de l'émail et qu'alors une étroite crevasse existe

au bord libre de la gencive. Gottlieb appela cette relation entre l'épithélium et l'émail: attachement épithélial.

En partant de l'existence de cette relation organique entre l'épithélium gingival et l'émail, prouvée par des chercheurs tels que Gottlieb, Orban, Bodecker, Turner, Kronfeld, nous étudierons en détail l'attachement épithélial au cours de son développement, son origine, ses changements au cours de l'éruption de la dent, son mode d'attachement ainsi que la formation du sulcus gingival que l'attachement épithélial forme avec la dent;

*Université de Montréal.

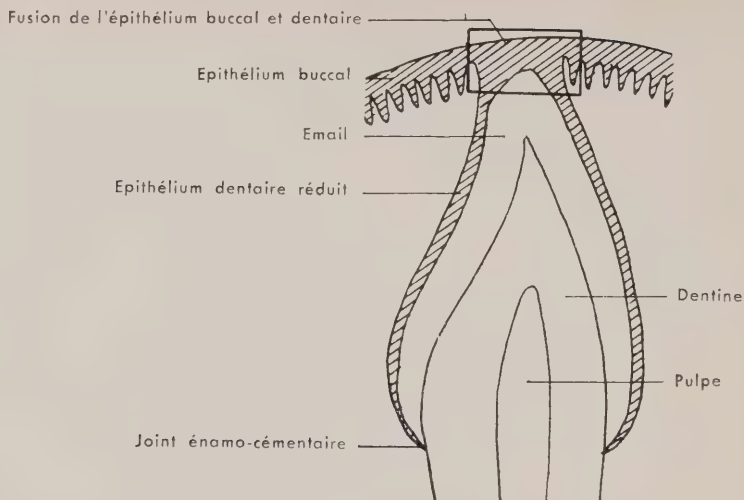


FIGURE 1 (D'après Orban: *Oral Histology and Embryology*; C. V. Mosby Co.)

puis, dans une seconde partie, nous considérerons ces modifications d'ordre prolifératif et dégénératif qui conduisent à la formation de poches péri-dentaires. Enfin, nous terminerons notre étude en considérant la récession de l'attachement épithélial en rapport avec les traitements péri-dentaires.

ORIGINE

L'attachement épithélial dérive directement de l'épithélium réduit de l'email. En effet, après la formation de la matrice d'email, les améloblastes produisent une mince membrane sur la surface de l'email: c'est la cuticule primaire d'email. Par la suite, ces améloblastes raccourcissent; les cellules épithéliales comprenant l'organe de l'email sont réduites à quelques couches de cellules cuboïdales que l'on appelle: épithélium réduit de l'email. Ce dernier couvre la surface entière de l'email en s'étendant jusqu'au joint énamo-cémentaire et demeure attaché à la cuticule primaire d'email.

Au moment de l'éruption de la dent, l'épithélium dentaire réduit se confond avec l'épithélium buccal (Figure 1). L'épithélium qui couvre le bout de la dent dégénère lorsque celle-ci émerge dans la cavité buccale (Figure 2). L'épithélium dentaire réduit demeure organiquement attaché à la partie de l'email qui n'est pas encore sortie. Une fois que les cuspides de la couronne sont sortis, cet épithélium dentaire réduit est appelé attachement épithélial. Dans les dents en éruption, cet attachement s'étend jusqu'au joint énamo-cémentaire (Figure 3).

STRUCTURE MICROSCOPIQUE

Si on examine la structure microscopique de l'attachement épithélial, on remarque qu'au début elle consiste en trois ou quatre couches de cellules qui s'épaississent avec l'âge jusqu'à dix à vingt rangées ou plus. Elles sont allongées et arrangées plus ou moins parallèlement à la surface de la dent. Les cellules de surface sont fermement accolées à la

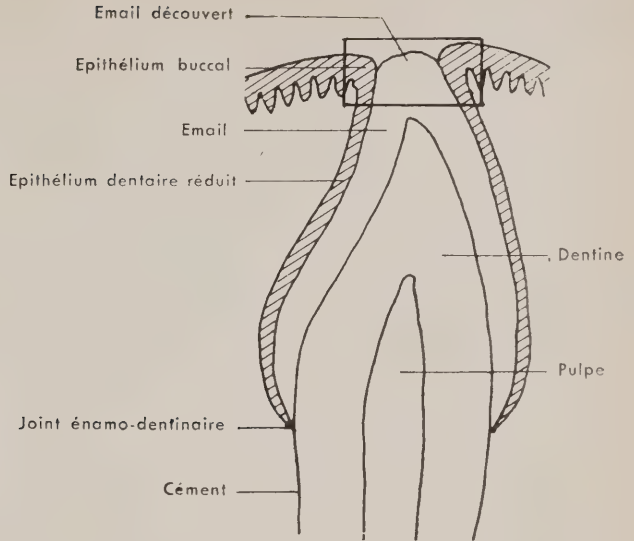


FIGURE 2 (D'après Orban: Oral Histology and Embryology; C. V. Mosby Co.)

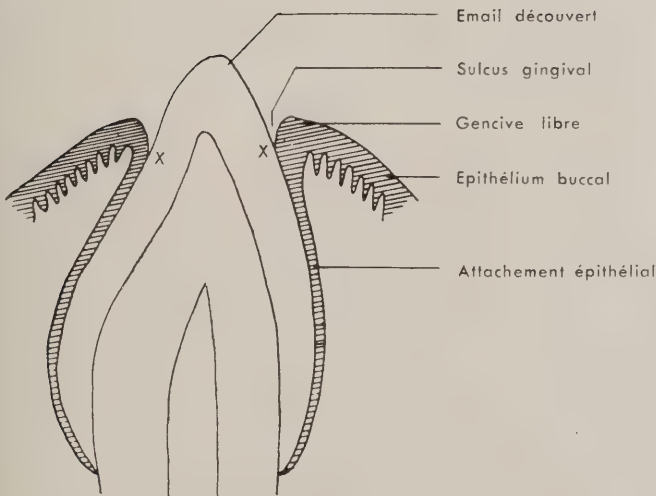


FIGURE 3 (D'après Orban: Oral Histology and Embryology; C. V. Mosby Co.)

dent et doivent suivre tous ses mouvements. La couche basale de l'attachement épithélial est ancrée aux tissus conjonctifs sous-jacents et doivent suivre tous les mouvements auxquels le bord de la gencive est sujet.

VARIATIONS AVEC L'ÉRUPTION PASSIVE DE LA DENT

La position de l'attachement épithélial varie constamment au cours de l'éruption

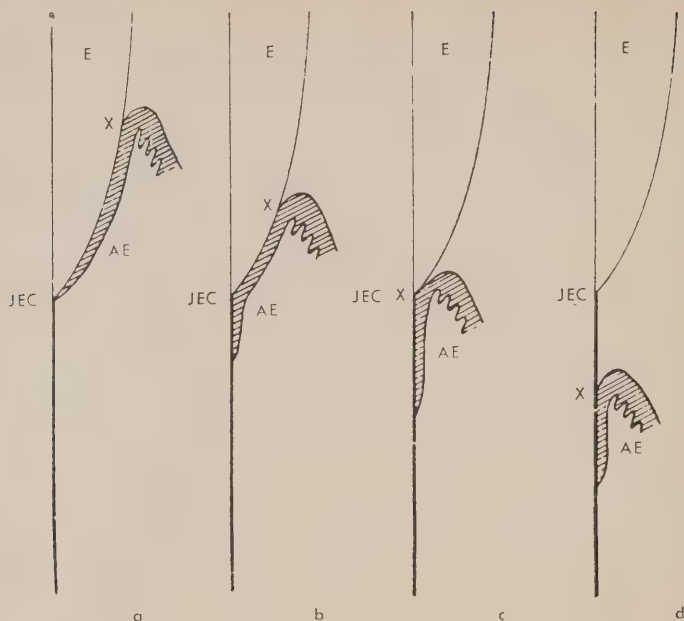


FIGURE 4 E, émail; JEC, jonction énamo-cémentaire; X, fond du sulcus gingival; AE, attachement épithélial. (D'après Orban: *Oral Histology and Embryology*; C. V. Mosby Co.)

passive de la dent, ce qui amène la séparation de l'attachement épithélial de l'émail. Gottlieb divise cette exposition en quatre étapes (Figure 4).

A la première, le sulcus gingival se trouve sur l'émail et la terminaison apicale du rebord épithélial attaché se trouve à la jonction énamo-cémentaire. Ce stage dure dans les dents permanentes jusque vers l'âge de vingt à trente ans.

Au cours du second stage, l'épithélium prolifère le long de la surface du cément; la base du sulcus gingival se trouve sur l'émail et la fin apicale de l'attachement épithélial se trouve alors dans la partie cervicale de la racine sur le cément. Ce second stage peut persister jusqu'à l'âge de quarante ans ou plus tard.

Au troisième stage de l'exposition passive de la dent, le fond du sulcus gingival est à la jonction énamo-cémentaire et

l'attachement épithélial est alors entièrement sur la racine. L'éruption active et l'éruption passive de la dent continuant, l'épithélium descend graduellement le long de la surface de la dent et le quatrième stage de l'exposition passive est atteint alors que la base du sulcus gingival et l'attachement épithélial se trouvent sur la racine.

Il est à remarquer que le taux d'exposition passive de la dent varie chez certaines personnes et chez différentes dents chez un même individu, aussi bien que sur différentes surfaces de la même dent; dans certains cas, le quatrième stade de l'exposition passive de la dent est observé chez des personnes à vingt ans; chez d'autres, à l'âge de cinquante ans ou même davantage, les dents sont encore à leur premier ou second stade d'exposition.

MODE D'ATTACHEMENT

Si l'on examine le mode d'attachement de l'épithélium, on remarquera qu'aussi longtemps que la maturation de l'émail n'est pas complétée, il y a une union organique primaire entre les améloblastes et l'émail interposés par la cuticule primaire d'émail. On pensait que cette union primaire persistait après la maturation de l'émail et la calcification de la cuticule primaire; et, alors, on regardait l'attachement épithélial dans la dent en éruption et en fonctionnement comme une unité primaire de cellules et d'émail. Cependant, on peut douter de la persistance de cet attachement primaire durant la période fonctionnelle de la dent; il semble plus probable qu'elle soit remplacée par un attachement secondaire durant la formation de la substance cémentaire appelée cuticule secondaire. Quand l'épithélium prolifère plus loin que la jonction énamo-cémentaire, il s'attache alors au ciment. Alors la cuticule secondaire d'émail s'étend maintenant le long du ciment. C'est pourquoi, la cuticule secondaire d'émail et la cuticule cémentaire sont identifiées comme formant la cuticule secondaire.

LE SULCUS GINGIVAL

Le sulcus gingival se forme quand le bout de la couronne émerge à travers de la muqueuse buccale résultant de la séparation de l'épithélium réduit de la dent en éruption active. Peu après l'apparition du bout de la couronne dans la cavité buccale, la dent établit son occlusion avec son antagoniste. Durant cet intervalle, l'épithélium se sépare rapidement de la surface de la dent. Plus tard, quand la dent atteint son occlusion, la séparation de l'attachement épithélial de la surface de la dent ralentit.

La formation et la profondeur relatives du sulcus gingival aux différents âges a toujours été un sujet controversé. Jusqu'à ce que l'attachement épithélial soit re-

connu, on croyait que le sulcus gingival demeurait à la jonction énamo-cémentaire aussitôt après que le bout de la couronne eut percé la muqueuse buccale (Figure 5a). On croyait que l'attachement de l'épithélium gingival à la dent était linéaire et existait seulement au joint énamo-cémentaire.

Depuis qu'on a décrit l'attachement épithélial, pour la première fois, on a reconnu qu'il n'existe aucune fissure entre l'épithélium et l'émail, mais que l'émail et l'épithélium sont en relation organique. Le sulcus gingival est simplement une gouttière peu profonde, dont le fond est au point de séparation de l'attachement de la dent (Figure 5b).

La séparation de l'épithélium de la dent est maintenant considérée comme un processus physiologique. Quelques scientifiques prétendent que la profondeur du sulcus gingival est due à une déchirure dans l'épithélium attaché (Figure 5c).

D'autres disent que le sulcus gingival se forme à la ligne de fusion entre l'épithélium attaché de l'émail à la surface de l'émail et l'épithélium buccal (Figure 5d).

En conséquence, l'épithélium buccal prolifère du côté du tissu conjonctif du rebord épithélial et remplace l'épithélium d'émail précédent qui dégénère progressivement.

La profondeur du sulcus gingival normal a été une cause fréquente de controverses et de recherches. Sous des conditions normales, la profondeur du sulcus varie de 0 à 6 mms. On peut établir que, moins le sulcus est profond, plus favorables sont les conditions au bord gingival. Chaque sulcus peut être appelé normal en regard de sa profondeur, si on ne voit pas de signes d'un état pathologique dans les tissus sous-jacents. On ne doit pas considérer, par le fait même, comme une condition pathologique, la présence de leucocytes et de cellules du plasma dans le tissu conjonctif au fond du sulcus gingival.

C'est plutôt l'évidence d'une réaction de défense en réponse à la présence cons-

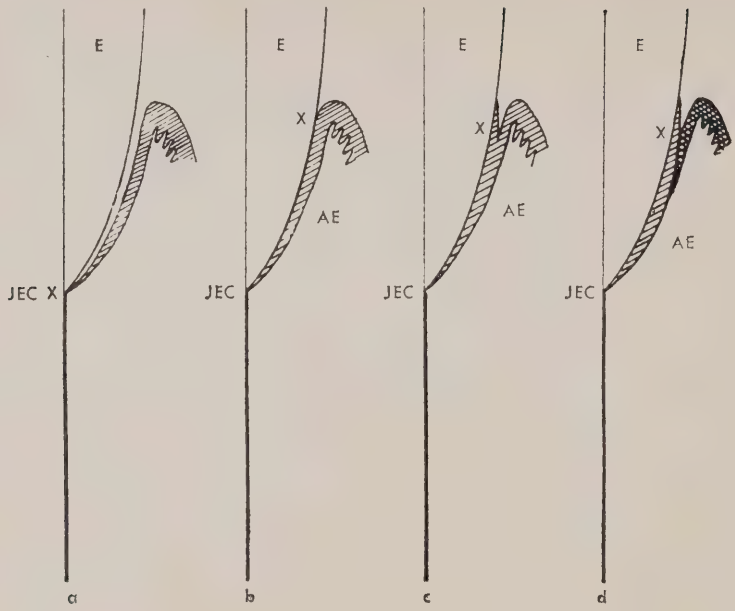


FIGURE 5 E, émail; JEC, jonction énamo-cémentaire; X, fond du sulcus gingival; AE, attachement épithélial. (D'après Orban: Oral Histology and Embryology; C. V. Mosby Co.)

tante de bactéries dans le sulcus gingival. Ces cellules forment une barrière contre l'invasion des bactéries et la pénétration de leurs toxines.

MODIFICATIONS DE L'ATTACHEMENT
ÉPITHÉLIAL AU COURS
DES MALADIES PÉRIDENTAIRES

Au cours des maladies périodentaires, l'attachement épithélial migre le long de la surface de la dent sur la racine: ceci a pour effet d'augmenter la profondeur du sulcus gingival et de provoquer la formation de poches périodentaires.

On peut classer en deux phases les changements que subit l'attachement épi-

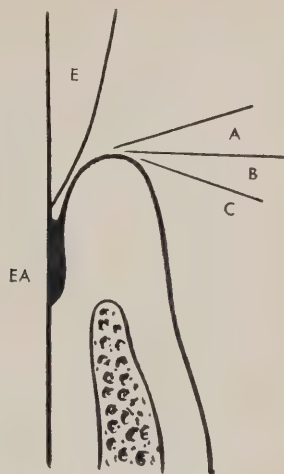
thélial, lorsque le sulcus devient une poche périodentaire: une phase de prolifération et une phase de dégénérescence. Pour faire l'étude de ces modifications, nous diviserons l'épithélium du sulcus en trois parties:

- 1. Attachement épithélial
- 2. L'épithélium bordant le bord latéral
- 3. L'épithélium formant le bord gingival

L'ATTACHEMENT ÉPITHÉLIAL

La prolifération de l'attachement épithélial amène le mécanisme du mouvement de la base de la poche le long de la racine. Ceci forme dans une direction

FIGURE 6 E, émail; EA, attachement épithélial; A, position du bord gingival reste fixe: poche; B, position du bord gingival migre coronairement: poche; C, position du bord gingival migre dans la même direction que l'attachement épithélial, mais plus lentement: poche. (D'après Glickman: Clinical Periodontology; W. B. Saunders Co.)



verticale des extensions en forme de gousses adhérentes à la dent et dans une direction latérale des projections en forme de doigts; on voit microscopiquement environ trois couches de cellules en épaisseur.

La prolifération de l'attachement épithélial au cours de la formation d'une poche diffère dans la mesure où elle représente une accélération dans le taux d'activité physiologique. On a remarqué, qu'au cours de la formation de la poche, l'attachement épithélial migre dans une direction apicale le long de la racine. S'il devait rester attaché sur toute sa longueur, son bord superficiel resterait en place et la position de la base du sulcus normal ne serait pas changée.

Cependant, dans la formation de la poche, la portion coronaire de l'attachement épithélial se détache progressivement de la racine à mesure qu'il migre apicalement. Le bord gingival reste en position ce qui a pour effet d'augmenter la profondeur du sulcus. Bien que la prolifération de l'attachement épithélial, dans une direction apicale le long de la racine, puisse initier la formation d'une poche, il n'y aura formation d'une poche

que si les changements suivants se produisent dans la position du bord gingival: si la position du bord gingival reste fixe; si le bord gingival migre dans la même direction que celle de l'attachement épithélial, c'est-à-dire dans une direction coronaire, mais à un rythme plus lent (Figure 6).

Si la vitesse de mouvement de l'attachement épithélial, dans la direction de l'apex, est égale au changement dans la position du bord gingival, nous avons ce qui en essence est un mouvement d'un sulcus intact le long de la racine: c'est ce qu'on appelle la récession sans formation de poche. Cliniquement, il est important de comprendre que l'attachement épithélial à la base de la poche présente des variations marquées en longueur, largeur et dans la condition des cellules épithéliales. Les variations vont d'un attachement étroit et long à un groupe de cellules pouvant le rendre large et court; les cellules peuvent être bien formées et en bonne condition ou être minces, comme c'est le cas, lors de la dégénération de l'attachement épithélial.

On doit noter spécialement le fait que l'extension de l'attachement épithélial, le

long de la racine, requiert la présence de cellules épithéliales normales. Des changements dégénératifs marqués dans cette région retarderaient plutôt qu'accéléraient la formation de poche. La présence d'un attachement intact dans des poches périodentaires profondes, qui présentent une dégénération sévère et des changements nécrotiques dans l'épithélium, le long du bord latéral, vient en conflit avec l'opinion que l'attachement épithélial du sulcus gingival est un endroit extrêmement vulnérable et que la formation de poche est initiée par sa dégénération pathologique.

On voit des changements dégénératifs dans l'attachement épithélial à la base des poches périodentaires; bien que de tels changements puissent être graves, ils sont ordinairement moins sérieux que ceux qui se produisent dans l'épithélium du bord latéral de la poche.

L'ÉPITHÉLIUM BORDANT LE BORD LATÉRAL

Des changements frappants se produisent dans l'épithélium du mur latéral du sulcus au cours de la formation de la poche.

L'épithélium croît latéralement dans le tissu conjonctif pour former un réseau de cordons entrelacés ou de bourgeons épithéliaux séparés. Ces proliférations latérales dans le tissu conjonctif s'étendent fréquemment au-dessous du niveau de l'attachement épithélial.

Les changements dégénératifs résultent de l'infiltration par les cellules inflammatoires et l'oedème du tissu conjonctif inflammé sous-jacent. Les changements dégénératifs dans l'épithélium du bord latéral consistent en une perte d'une démarcation nette entre les cellules épithéliales basales et le tissu conjonctif entourant. Les ponts intercellulaires deviennent enflés et saillants. Les cellules augmentent en grandeur. Comme résultat de cette distension marquée, les ponts intercellulaires se brisent; il en résulte des vésicules intercellulaires.

Dès changements dégénératifs très

graves se produisent dans la paroi latérale de la poche. Cette dégénération et une destruction progressive des cellules épithéliales mènent à un bris dans la continuité de l'épithélium et à une exposition du tissu conjonctif sous-jacent remarquablement inflammé.

Il n'y a aucune relation entre la gravité de ces changements et la profondeur de la poche. Il existe des poches extensives dans lesquelles le degré de dégénération est minime; d'autres poches peu profondes présentent de la dégénération et de la nécrose.

L'ulcération et la nécrose dans la paroi épithéliale latérale facilitent la formation d'exudat purulent que l'on voit parfois au cours de la formation d'une poche. L'exudat consiste en une abondance de leucocytes vivants, dégénérés et nécrotiques, principalement du type polymorphonucléaire, de bactéries vivantes ou mortes, de sérum et de fibrine.

En plus de cet exudat, l'espace formé par la poche contient des débris d'aliments à différents degrés de décomposition, des débris des cellules et de mucine de la salive et de calculs débordant de la surface de la dent.

L'ÉPITHÉLIUM FORMANT LE BORD GINGIVAL

L'épithélium du bord gingival de la poche périodentaire est généralement épais et projette des extensions dans le tissu conjonctif sous-jacent. Occasionnellement, ces extensions sont séparées par des surfaces dans lesquelles l'épithélium est aminci résultant de la pression causée par le tissu conjonctif sous-jacent. Moins fréquemment dans des cas marqués de graves inflammations, le bord gingival de la poche dégénère et se nécrose.

LA RÉCESSION ET LA POCHE PÉRIDENTAIRE ET LES TRAITEMENTS ÉVENTUELS

La récession pathologique de l'attachement épithélial en est une qui est

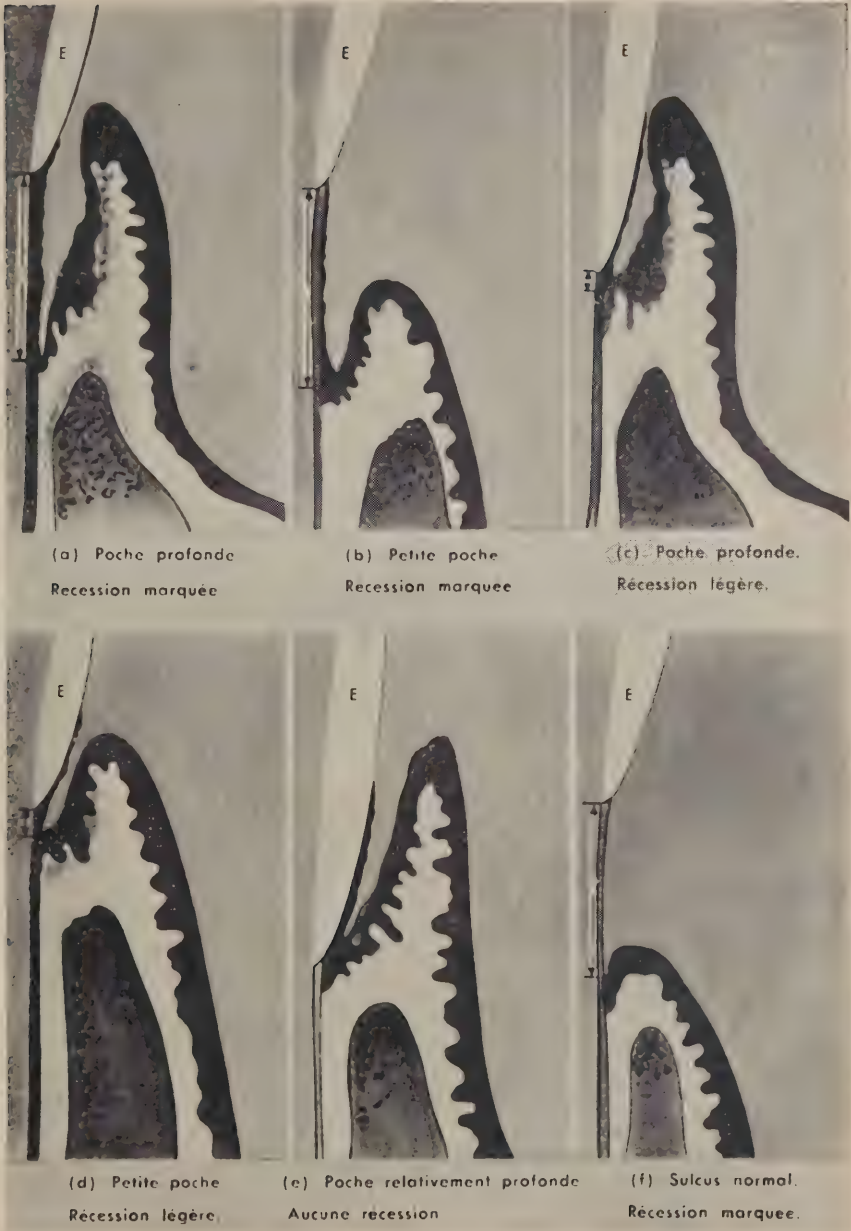


FIGURE 7 (D'après Glickman: Clinical Periodontology; W. B. Saunders Co.)

plus grande que la normale et ordinairement associée avec la formation d'une poche péri-dentaire. Cependant, le degré de récession n'est pas en relation avec la profondeur de la poche. On a dit auparavant que la récession est le résultat du mouvement de l'attachement épithélial le long de la racine et de son détachement de la surface de la racine.

Le taux de récession est déterminé par le niveau le plus coronaire de l'attachement épithélial.

La profondeur de la poche, d'un autre côté, résulte du mouvement de l'épithélium le long de la racine et de son détachement de la surface de la racine en plus d'une diminution dans le volume gingival qui amène la crête du bord gingival dans la direction de la couronne. La profondeur de la poche représente la distance entre le niveau de l'attachement épithélial attaché et la crête du bord gingival.

Les variations qui peuvent exister entre le degré de récession et la profondeur de la poche apparaissent dans les figures suivantes. Dans la figure 7a, il y a une poche profonde et une récession marquée. Dans la figure 7b, il y a une petite poche avec un degré de récession comparable à celle de la figure 7a. Dans la figure 7c, il y a une poche profonde avec une légère récession. La comparaison des figures 7b et 7c est particulièrement intéressante. La différence entre la profondeur de la poche dans les deux cas pourrait nous laisser croire que la racine est plus dénudée dans la figure 7c, mais c'est l'opposé que nous avons. Dans la figure 7d, il y a une petite poche avec une légère récession. Dans la figure 7e, il y a une poche profonde sans récession. C'est ce que l'on appelle

une poche relative, car elle n'est associée à aucune destruction du tissu sous-jacent. Dans la figure 7f, la gencive est normale, mais la récession est marquée; ceci démontre que la récession peut être en excès sur le taux normal, même en l'absence de n'importe quel changement pathologique dans les tissus gingivaux.

Cette appréciation de la disparité qui peut exister entre la profondeur de la poche et l'extension de la récession est importante cliniquement, si on considère le problème du traitement esthétique, surtout si l'on pense au montant de racine qui sera visible après le traitement de la poche péri-dentaire.

SUMMARY

The author describes the embryonic formation and the normal relations of the attachment of the gingival tissues to the teeth. He explains various forms of retraction of the gingival crevice under the influence of different pathological stimuli, leading to the destruction of the superior layer of the periodontal membrane and resulting in the formation of periodontal pockets.

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Rectification • Dans la livraison de décembre 1961 du Journal de l'Association dentaire canadienne (page 833), paraissait un article intitulé: "Echos du voyage en Europe de l'Association dentaire de la province de Québec". Dans cet article, on relatait, qu'au cours d'une réception, deux tomes de la réédition du livre de Pierre Fauchard avaient été présentés à l'Association et étaient un don de la Chambre de Commerce France-Canada. Les volumes ont été présentés par M. Jean Vinant, de la Chambre de Commerce France-Canada, mais ils étaient gracieusement offerts par M. Julien Prêlat, propriétaire de la librairie-édition d'odontologie et de stomatologie de Paris, France.

L'Association dentaire de la Province de Québec

7ième congrès

Chicoutimi, les 24, 25 et 26 mai 1962

Programme scientifique

Clinique de chirurgie, à l'Hôtel-Dieu, de Chicoutimi en circuit fermé de télévision en couleurs

— Clinicien: Antoine Raymond

Communication: "Théories de base et techniques pratiques pour le praticien général" — Conférenciers: Roland Baribeau et Vincent Dontigny

Programme économique-social

Conférence: "Etude sur la situation économique des dentistes du Québec" — Conférencier: M. Louis Roy, économiste

Colloque: "Recrutement des dentistes"—Jean-Paul Lussier

"Personnel auxiliaire"—Yves Dufresne

"Hygiène dentaire"—Lomer Lemieux

Programme social

Lunch du Collège—Conférencier: Rémy Langlois

Coquetel au Club de golf d'Arvida (soirée du bon vieux temps)

Souper saguenayen

Dîner de l'Association—Conférencier: Conrad Godin

Visite touristique

Coquetel de la Cité de Chicoutimi

Banquet et danse

Réception de clôture—Conférencier: Hon. Alphonse Couturier, Ministre de la santé

Programme des dames

Exposition-causerie: "Initiation à l'art saguenayen", par M. René Bergeron

Déjeuner offert par les magasins H. Lessard & Frères

Banquets et réceptions avec les maris

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Secrétariat: Roger Dufresne, 397 est Racine, Chicoutimi, P. Qué.

**CONGRES NATIONAL
L'ASSOCIATION DENTAIRE CANADIENNE
VANCOUVER, DU 3 AU 6 JUIN 1962**

Vancouver sous
les lumières.



Williams — G.V.T.A.

Communications

Principes de nature à épargner du temps et des pas au dentiste et à diminuer sa tension nerveuse

Conférence du Mémorial Grieve

Aspects de l'exercice dentaire

Emploi du nitrate d'argent et du fluorure d'étain pour le contrôle de la carie dentaire

Le rôle des auxiliaires dans l'éducation du patient

Philosophie et application de ces principes dans l'exercice dentaire de tous les jours

Psychologie du patient dentaire

Service auxiliaire

Evaluation des instruments tranchants actionnés à grande vitesse

Hypnose dentaire

Colloques	Le dentiste est-il intéressé à l'exercice de groupe?
	La douleur en dentisterie
	Evolution socio-économique de la dentisterie
Télévision	Mise en acte des principes au sujet du temps et de l'organisation de l'exercice dentaire
	Présentation de cas de pédodontie
	Démonstration d'hypnose
	Examen de la cavité buccale par la radiographie
	Endodontie
	Dents incluses
	Equilibration d'occlusion
Cliniques de table	Techniques indirectes pour incrustations
	Examen complet du système dentaire d'un enfant
	Anesthésie locale
	Instrumentation pour l'extraction des racines
	Or et porcelaine
	Jumellages et ponts temporaires
	Granulomes latéraux
	Amalgames complexes
	Le bruit en dentisterie
	Techniques indirectes pour les incrustations en porcelaine
	Techniques d'endodontie
	Facettes à épingle inversée
	Couronnes en acier inoxydable
	La digue chez les enfants
	Pulpotomie
	Incisives fracturées
	Orthodontie préventive
	Rétraction des gencives
	Digue
	Manipulation de l'amalgame
	Réhabilitation
	1. Emploi et localisation de l'axe d'articulation
	2. Modèles pour diagnostic
	3. Enregistrement des données de la mandibule
	4. Fixation d'un articulateur ajustable
	5. Technique pour disposer la cire pour toutes les dents
	6. Cas terminé
	7. Démonstration sur les facteurs d'occlusion
	Technique pour les prothèses complètes supérieure et inférieure
	Prise d'empreinte pour les incrustations
	Maquettes et modèles de laboratoire
	Enregistrement d'occlusion et manipulation de la cire
	Essai et finition des incrustations
	Stérilisation pour la chirurgie
	Technique de radiographie
	Urgences dans le cabinet
	Rôle de l'hygiéniste dentaire

FORMULE D'INSCRIPTION

Congrès annuel

ASSOCIATION DENTAIRE CANADIENNE

ASSOCIATION DENTAIRE DE LA COLOMBIE BRITANNIQUE

a/s Association dentaire de la
Colombie britannique
925 West Georgia Street
Vancouver 1, Colombie britannique

Vancouver, Colombie britannique
du 3 au 6 juin, 1962

Nom

Adresse

Ville Province

Nom de l'épouse

Golf — oui ☐ non ☐

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épouse: \$10.00

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couvre le déjeuner de l'A.D.C. et ceux
du Collège et de l'Association dentaire
de la C.-B., la croisière en bateau et le
banquet et la danse du président.

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(Il faut remplir cette formule et l'envoyer avec la formule d'inscription)

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Hôtel Devonshire			\$10.50-13.50	☐	\$12.50-15.00	☐	\$21.00-25.00	☐
Hôtel Georgia	\$10.00-12.00	☐	\$13.00-13.50	☐	\$13.50-14.50	☐		
Hôtel Ritz	\$ 8.50-11.00	☐	\$11.00-15.00	☐	\$11.00-15.00	☐		
Hôtel Vancouver	\$10.00-15.00	☐	\$13.00-19.00	☐	\$13.50-20.00	☐	\$29.00 et plus	☐
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Motel Burrard			\$11.00-13.00	☐	\$13.00	☐		
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Arrivée: (date) (heure) Départ: (date) (heure)

On réservera les chambres selon l'ordre des demandes. Les organisateurs aimeraient que les congressistes s'incrivent à l'avance. On gardera les chambres réservées que jusqu'au 15 mai, si l'inscription n'est pas payée. Toute demande de chambre doit être accompagnée d'un chèque pour l'inscription. On obtient des formules pour des taux spéciaux de chemin de fer en s'adressant à l'A.D.C., 234 rue St-Georges, Toronto.

LES ACTUALITES DENTAIRES

L'Association

L'A.D.C. DEVANT LA COMMISSION ROYALE DES SERVICES DE SANTE

Les délégués de l'Association dentaire canadienne ont comparu devant la Commission royale des services de santé au cours des séances qui ont eu lieu à Ottawa, durant les deux dernières semaines de mars. Le mémoire soumis par l'Association avait été ratifié par le Conseil Exécutif à son assemblée du début de février. Ce mémoire renfermait une analyse complète des besoins de la nation canadienne pour des services dentaires.

Ces mémoires doivent être soumis à la Commission avant les séances publiques et ils ne sont pas lus au cours de ces séances. Les conclusions et les recommandations de mémoire ont été lues et les commissaires ont posé des questions. Les personnes suivantes représentaient l'Association au cours de cette séance:

le docteur William Miller, président

le docteur Don W. Gullett, secrétaire

le docteur Rémy Langlois, du Conseil Exécutif

le docteur William G. McIntosh, président du comité de rédaction du mémoire

le docteur James D. McLean, doyen de la faculté dentaire de l'Université Dalhousie

le docteur Robert M. Grainger, professeur de biométrie à la faculté dentaire de l'Université de Toronto

Mlle Isabel Boyd, directrice du Bureau des recherches économiques de l'A.D.C.

Le mémoire de l'Association fut rédigé sous la direction d'un comité spécial formé des docteurs McIntosh, P. G. Anderson et W. J. Dunn et inspiré des opinions de plusieurs membres de l'Association, dont des présidents de conseils, de comités et de sections de l'A.D.C. Les membres du Conseil Exécutif avaient reçu des copies du mémoire avant l'assemblée de février au cours de laquelle plusieurs heures furent consacrées à l'étudier en détail. La teneur des mémoires, selon une recommandation de la Commission, doit rester secrète jusqu'à la séance qui en prend connaissance.

TOURNEE DU PRESIDENT DANS L'OUEST DU PAYS

Le docteur William Miller, de Vancouver, président de l'Association dentaire canadienne a rendu visite aux sociétés dentaires de l'ouest du Canada. Il était accompagné du docteur Don W. Gullett, secrétaire de l'Association.

Cette tournée a été l'une des plus chargées de l'histoire de l'Association, puisque, en neuf jours, le président a rendu visite à huit groupements dentaires tous situés dans des villes différentes. Le président et le secrétaire ont pris la parole devant des sociétés dentaires et devant les étudiants d'Edmonton et de Winnipeg. La journée a débuté le 26 février, à Winnipeg, se poursuivant à Regina, le 27 février, à Saskatoon, le 28, à Edmonton, le 1er mars, à Calgary, le 2, Lethbridge, le 3, Victoria, le 3, se terminant à Vancouver le 6 mars.

Le président et le secrétaire ont fait une tournée dans l'est du pays en novembre et en décembre.

TARIFS REDUITS POUR LE CONGRES DE VANCOUVER

Les chemins de fer offrent des taux réduits aux membres de l'Association et à leur famille qui veulent assister au congrès de Vancouver. Le congrès a lieu au Théâtre Queen Elizabeth, du 3 au 6 juin. Les dates où les réductions sont valides, selon les règlements de l'Association canadienne des passagers, pour le début du voyage sont les suivantes:

Toutes les gares de Terre-Neuve: du 20 au 28 mai.

Toutes les gares à l'ouest de Port-Arthur et comprenant Armstrong, Ontario: du 26 mai-3 juin.

Toutes les gares à l'est de Port-Arthur et Armstrong (excepté Terre-Neuve): du 23 au 31 mai.

Il faut se procurer un certificat au secrétariat de l'A.D.C. pour profiter de ces rabais. Les lignes d'avion ne réduisent pas leurs tarifs.

NOUVEAUX COURTS METRAGES REMIS AUX POSTES DE TELEVISION

Une nouvelle série de courts métrages de 60 secondes a été remise aux postes de télévision partout au Canada. Ces trois nouveaux films, qui sont des messages au sujet de la santé dentaire, traitent de "Traitement précoce des dents", "La nutrition et le soin des dents", "Le soin des dents et la santé en général".

Chacun des films contient une légende disant que ce message est offert aux spectateurs par "votre poste de télévision et l'Association dentaire canadienne".

Le premier groupe de ces courts métrages a été très populaire. Les postes de télévision de Saint-Jean à Victoria ont donné gratuitement des centaines de minutes qui ont été consacrées au service du public; le temps pris par ces courts métrages représente une valeur de plusieurs milliers de dollars.

Comme c'était le cas pour le premier groupe de films, la deuxième série a été réalisée en français et en anglais. La préparation de ces nouveaux films a été faite en vue de répondre à la demande pour du matériel de télévision qui a été utilisé à l'occasion de la journée de l'hygiène dentaire (le 14 mars) de la Semaine nationale de santé, organisée par la Ligue de santé du Canada.

Les films ont été réalisés par la Crawley Films Ltd d'Ottawa, sous la direction du Bureau des informations au public de l'Association dentaire canadienne et avec les conseils de spécialistes en hygiène dentaire publique.

NOUVEAU DEPLIANT SUR LA CARRIERE D'HYGIENISTE DENTAIRE

Le comité national de recrutement vient de publier un nouveau dépliant décrivant la carrière d'hygiéniste dentaire. Ce dépliant donne des renseignements sur le travail, les qualifications et la formation des hygiénistes dentaires et il est écrit spécialement à l'intention des jeunes filles qui choisissent une vocation. Ce fascicule est en vente au secrétariat de l'Association au prix de \$1.65, le cent.

NOUVEAU VOISIN DU SECRETARIAT

Le secrétariat de l'Association dentaire canadienne souhaite la bienvenue à un nouveau voisin, l'Association médicale d'Ontario. Installé à deux portes plus au nord, cet organisme médical a acheté la propriété voisine de celle du secrétariat de l'A.D.C. Les deux

propriétés ont ensemble une façade de 145 pieds et une profondeur de 195 pieds avec suffisamment de terrain pour des agrandissements futurs.

On avait offert cette propriété à l'Association dentaire canadienne, mais les projets formulés pour son agrandissement ne prévoyaient pas l'achat d'un autre immeuble.

On croit que l'agrandissement de l'immeuble de l'A.D.C. commencera au printemps.

Le Canada

SEMAINE NATIONALE DE SANTE, DU 11 AU 17 MARS

La semaine nationale de santé annuelle a été observée pour la dix-huitième fois, du 11 au 17 mars; cette semaine est organisée par la Ligue de santé du Canada et mercredi, le 14, était la journée consacrée à l'hygiène dentaire.

La Ligue, constatant que "la santé est l'affaire de tous" organise la semaine nationale de santé en collaboration avec les Ministères de santé et d'éducation et d'autres organismes du pays. Cette semaine se propose d'unir les efforts pour attirer l'attention des Canadiens sur la nécessité d'améliorer et de conserver la santé par tous les moyens possibles. La radio, la télévision et les journaux collaborent pour faire, durant cette semaine, une publicité considérable aux questions de santé.

Au cours de la journée d'hygiène dentaire, le programme de télévision "Romper Room" consacré aux enfants a présenté à son auditoire des causeries sur l'hygiène dentaire faites par des dentistes et d'autres attractions du même genre. Les enfants qui étaient au programme ont reçu des brosses à dents avec des conseils sur la meilleure façon de s'en servir.

TIMBRE-POSTE SUR L'EDUCATION

Le Ministère des postes a émis un timbre-poste spécial en l'honneur de l'éducation. Ce timbre-poste était de cinq sous et il a été mis en circulation le 28 février. Ce timbre-poste a été émis à l'occasion de l'année de l'éducation au Canada et en particulier à l'occasion de la Conférence canadienne sur l'éducation qui a eu lieu à Montréal, au début de mars. L'Association dentaire canadienne était représentée à cette Conférence par le docteur Jean-Paul Lussier, vice-doyen de la faculté de chirurgie dentaire de l'Université de Montréal et aussi président du Conseil d'enseignement dentaire de l'A.D.C. et par le docteur J. W. Neilson, doyen de la faculté de chirurgie dentaire de l'Université du Manitoba.

The Canadian Dental Association

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A Maxillary Cuspid Three-Quarter Crown Preparation of Increased Retentive Form

D. B. McADAM,* D.D.S., Toronto, Ontario

In these days of full-mouth rehabilitation using full crown attachments, the use of a three-quarter crown in crown and bridge procedures is no longer the common practice it once was. Dental laboratories now are able to achieve an aesthetic result in full coverage attachments using various combinations of porcelain, acrylic resin, gold, and platinum.

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These more expensive procedures look quite lifelike and their use in many instances is mandatory.

There are still situations, however, where the attachment of choice remains a well-designed and well-executed three-quarter crown, since it offers good bridge support, yet leaves the labial plate of enamel untouched for aesthetic purposes. Provided the abutment tooth is not mutilated, nor the labial enamel unsightly,

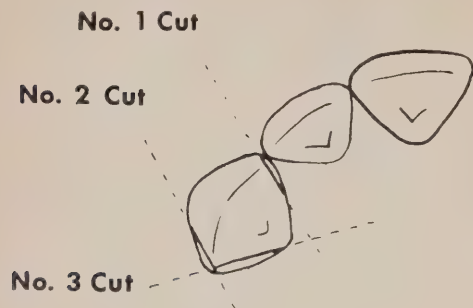


FIGURE 1 The initial cuts made in establishing the three-quarter crown outline.

the three-quarter crown will remain prominent in bridge planning when a modest amount of visible gold is not objectionable to the patient and economy is a factor.

Sometimes the composite full crown attachment is very satisfactory aesthetically, but achieves this favourable colour at the cost of a thickened bulk and altered labial contour. This more bulky crown contour, in turn, may create a loss of tissue tone in the adjacent gingival tissues where the circulation becomes impaired through a loss of functional stimulus or crowding of the gingival crevice. To minimize this tendency of the composite full crown toward increased labial bulk, it is necessary to remove a considerable amount of labial tooth structure and rely on the skill of a careful and experienced laboratory technician. Indeed, the writer has had the experience of constructing a bridge using a composite full crown attachment on a maxillary cuspid and feeling that the result would have been more pleasing had he retained that labial plate of enamel and elected to show the thin gold line of a three-quarter crown.

Whatever the reasoning in selecting a bridge design, however, we shall assume for the moment that we have elected to use a three-quarter crown as a maxillary cuspid attachment and that it

will be under considerable stress so that we will want a maximum of retentive form.

The fact that it is a maxillary cuspid presents two conflicting problems — to cover as much of the tooth as possible for retention's sake, yet to show as little gold as possible for appearance's sake.

First, let us consider what part of the maxillary cuspid is noticeable when the patient smiles. In the average mouth, one sees only the mesial half of the labial surfaces, for the distal half is obscured by the labial height of contour and is seen only when the patient's smile is viewed from the side. Whatever gold is allowed to show on the mesial half of the labial surface, then, will be apparent from all angles and in all mouth movements; while the gold showing on the distal half will be seen only from the side, and then only when the patient is smiling. It would therefore seem wise to minimize as much as possible the mesio-labial gold and make any compensation necessary on the distal surface.

This may be accomplished in the following manner:

1. The mesial contact point is cleared as narrowly as possible with a diamond or lightning disk, as illustrated by cut No. 1 in Figure 1.

2. Reversing the disk on the mandrel, a parallel cut is made on the labial aspect of the distal surface, keeping it distal to the labial height of contour. This cut is parallel in the horizontal plane, and nearly parallel in the vertical plane. These first two cuts establish the path of insertion of the bridge, and ensure a crown outline that will encircle the tooth for at least 180° as illustrated by cut No. 2 in Figure 1.

3. Using the same disk, the third cut is made on the lingual aspect of the distal surface, clearing the distal contact point along the path of insertion, yet leaving as much of the disto-labial corner as possible. This is illustrated by cut No. 3 in Figure 1.

4. The lingual side of the cingulum is reduced along the path of insertion.

5. The remaining lingual enamel is reduced so that the incisal finishing line is kept just lingual to the mesial cutting arm and does not cross over the incisal edge until it reaches the distal cutting arm (Figure 2). In this manner, the only gold shown from the facial view is a thin line at the mesial surface (as thin as we can possibly make it). The slightly greater amount of gold at the distal corner is concealed by the labial height of contour. A good rule is never to leave a margin on a wear facet. If there is a wear facet just lingual to the mesial-incisal edge that cannot be eliminated in bite adjusting, then the gold must cover the mesio-incisal edge very slightly. It will also be noted that this three-quarter crown outline, while inconspicuous in most cases, may be more conspicuous where there is an abnormal tooth arrangement or abnormal tooth form.



FIGURE 2 The finished three-quarter crown outline.

6. Using a No. 700 bur, the mesial groove is prepared along the path of insertion established by cut No. 2, i.e. parallel to the disto-labial surface and as close to the mesial finishing line as possible (Figure 3).

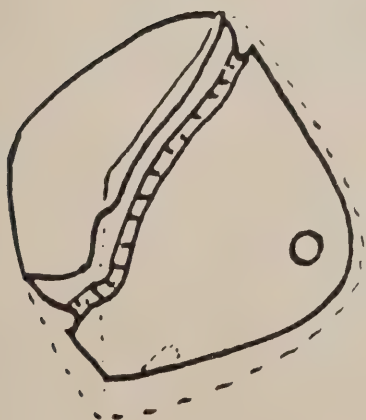


FIGURE 3 The finished three-quarter crown preparation. Note the position of the disto-labial groove compared with the more traditional disto-lingual groove shown in dotted line.

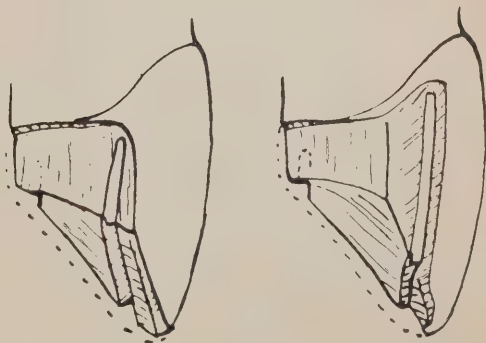


FIGURE 4 Left, the distal aspect of the three-quarter crown preparation herein described. Right, the more conventional three-quarter crown preparation. Note the difference in length between the distal grooves in the two illustrations, and the preservation of the distal corner in the preparation on the left.

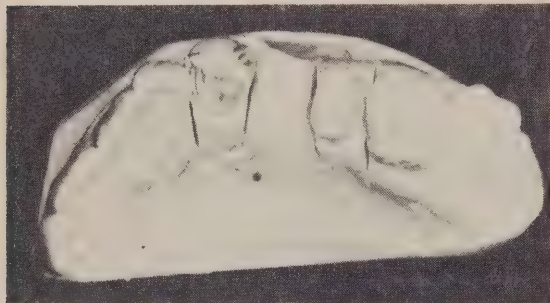


FIGURE 5 A bridge preparation using three-quarter crowns on the maxillary right cuspid and second bicuspid.



FIGURE 6 The constructed bridge. Note the extreme length of the distal groove and flange.

7. The distal groove is then placed with as much parallelism as possible on the prepared disto-labial surface, (Figure 3), and not on the disto-lingual surface (shown in dotted line) where it is more conventionally located. Tylman¹ describes the greatest dislodging force on a three-quarter crown attachment as a lingual rotation with the base of the mesial and distal grooves as the centre of the arc. The preservation of the distal corner and the placement of the distal groove labial rather than lingual to this corner, adds tremendously to the resistance form of the three-quarter crown and discourages this lingual displacement. To this end, any distal cavity in the cuspid must be restored with silver amalgam before the tooth is prepared for the three-quarter crown, so that all grooves may be made in amalgam or sound tooth structure. Where there is gross loss of distal tooth structure, the distal corner may be rebuilt strongly using amalgam in conjunction with threaded stainless steel pins as outlined by Markley.²

It will also be noted that the disto-labial flange and groove here described are considerably longer than in a more conventional preparation where the distal slice merely clears the contact point in a manner similar to the mesial slice — an unnecessary aesthetic limitation (Figure 4). This disto-labial groove extends further gingivally and incisally than that designed



FIGURE 7 The bridge at insertion with disto-labial gold concealed behind the labial height of contour. The presence of a wear facet on the mesio-incisal edge and the slight rotation of the lateral incisor necessitated showing more anterior gold than desired.

by Tinker,³ and by preserving the distal bulk of tooth structure, this groove may have excellent depth, yet not lie within deep tooth tissue.

8. A linguo-incisal groove is then made joining the mesial and distal grooves in such a manner as to cross over the distal cutting arm and lie just within the incisal finishing line (Figure 3). This incisal groove along with the mesial and distal grooves imparts a "stapling effect" to the crown.



FIGURE 8 A cuspid to second bicuspid bridge in place using three-quarter crown attachments. Tooth alignment and bite were favourable so that no mesio-incisal gold shows and all distal gold is concealed behind the labial height of contour.

9. A lingual pin hole is then placed in the cingulum with a No. 701 bur, and though not strictly necessary, will further enhance the retentive form (Figure 3).

10. All prepared surfaces are lightly disked to allow for feathering of margins. Disking of the labial aspect of the mesial groove, and the mesial aspect of the disto-labial groove improves the grooves and adjacent margins.

SUMMARY

1. Where a bridge attachment is required for a sound attractive maxillary cuspid and a small amount of visible gold is not offensive to the patient, excellent bridge retention may be achieved with the type of three-quarter crown described.

2. The three-quarter crown outline extends approximately 180° around the tooth and yet avoids "framing" the mesio-



FIGURE 9 Incisal view of cuspid attachment.

incisal edge with gold unless forced by a heavy bite to do so. The disto-labial margin would be hidden behind the labial height of contour.

3. The distal corner is preserved and the distal groove is located on the labial aspect of sound tooth structure or amalgam.

4. This disto-labial groove is exceptionally long since the anatomy of the tooth permits it, and is joined by an incisal groove to the mesial groove thus creating a strong "stapling" effect.

5. Provision is made for a cingulum pin.

CONCLUSION

It will be evident that the suggested three-quarter crown preparation outlined above is not applicable to the incisors where the entire labial surface is clearly seen. It will also be evident that only some of these principles need be applied to the broader, more inconspicuous posterior teeth. It is the writer's opinion, though, that the distal aspect of the buccal surface of posterior teeth is needlessly left uncovered in conventional three-quarter crown preparations, to the sacrifice of retentive form and with no aesthetic advantage.

The maxillary cuspid is a tooth with abutment problems peculiar to itself. Aesthetically, it is not completely an anterior tooth, nor is it a posterior tooth. Anatomically, its root shape and supporting bone make it a desirable bridge abutment. While its anatomy is not ideal for a three-quarter crown attachment since it is a single cusped tooth, its location at the corner of the mouth is extremely strategic in bridge planning.

While there are many solutions for constructing bridge attachments for the maxillary cuspid, the procedure outlined above is found to be most satisfactory when the design of choice calls for a three-quarter crown of highly retentive form.

RÉSUMÉ

La canine supérieure pose des problèmes particuliers quand on veut l'utiliser comme support pour un pont. Au point de vue esthétique, elle n'a pas les caractères d'une dent antérieure, ni ceux d'une dent postérieure.

Au point de vue anatomique, elle possède, grâce à la forme de sa racine et grâce à la qualité de l'os qui l'entoure, les facteurs désirables pour être un soutien de pont convenable. La forme de sa couronne, toutefois, puisqu'elle n'a qu'un cuspe, se prête mal à une couronne trois-quarts; sa position à la commissure de la lèvre la rend importante dans l'élaboration d'un pont.

L'auteur préconise un genre de couronne trois-quarts qui donne une excellente rétention, quand il faut mettre un pont sur une canine normale et quand le patient ne s'objecte pas à une petite ligne d'or.

Cette couronne trois-quarts couvre environ 180 degrés autour de la dent et ne se rend pas jusqu'au bord mésio-incisif, à moins qu'une occlusion serrée ne l'impose. La partie labio-distale de la couronne disparaît derrière la hauteur du contour labial.

L'angle distal est protégé et le sillon incisif est tracé sur le côté labial de la dent elle-même ou dans un amalgame.

L'anatomie de la dent permet un sillon disto-labial très long et ce sillon rejoint le sillon mésial par un sillon incisif; cette forme de cavité agit comme une crampe et donne à la couronne une rétention solide.

Cette forme de cavité peut prévoir l'insertion d'un pivot.

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73 Warren Road

The Clinical Management of Supernumerary Teeth

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Early diagnosis and subsequent treatment of any dental anomaly is very important in the prevention of many dental abnormalities.

With the increasing tendency on the part of many practitioners to take complete dental radiographs as a part of the oral examination, supernumerary teeth are being found with a greater frequency and at an earlier age in patients.

It is necessary to distinguish supernumerary teeth from a number of other dental anomalies such as supplemental teeth, mesiodens, denticles, and odontomata. The following definition based on morphology, size and location is helpful in classifying these several entities:¹

1. Supernumerary tooth.— This is an extra tooth which does not resemble any normal tooth from a morphological standpoint.

2. Supplemental tooth.— This is an extra tooth which does resemble a normal tooth from a morphological standpoint.

3. Mesiodens.— This is a supernumerary tooth which is located in the mid-line.

4. Denticle.— A denticle is a tooth-like object.

5. Odontome.— An odontome is an abnormal structure composed of tooth substance.

Therefore any increase in the number of teeth in excess of a normal complement of deciduous and permanent teeth is referred to as supernumerary teeth.

AETIOLOGY

Normal dental development may be divided into four phases — growth, calcification, eruption and attrition.

Growth.—Growth takes place in five stages:

(a) Initiation.—Invagination of the oral ectoderm and mesoderm at approximately the sixth week in utero; this is referred to as the dental lamina from which tooth buds develop.

(b) Proliferation.—Bud, cap and bell stages where the cells align themselves into outer and inner dental epithelium and stellate reticulum.

(c) Histodifferentiation.—Cells become specialized — ameloblasts or odontoblasts.

(d) Morphodifferentiation. — Contour and size is established.

(e) Apposition. — Hard tissue matrix is deposited in layers starting at the cuspal tips and progresses apically.

Calcification. — Calcification is characterised by a hardening of the dental matrix which becomes impregnated with mineral salts.

Several theories have been advanced to explain the origin of supernumerary teeth. Five of these are described below.

Atavistic Theory. — Supporters of atavism, i.e., phylogenetic reversion, attribute the increased number of teeth to a reversion to ancestral dentitions. Since pla-

Delivered before the annual meeting of the Ontario chapter, Canadian Society of Dentistry for Children, Toronto, May 20, 1961.



FIGURE 1 Periapical radiographs illustrating bilateral supplemental second bicuspid in a twelve-year-old boy.

cental mammals have a dental formula of:

$$\begin{array}{ccccccc} 6 & 2 & 6 & 8 \\ \text{I—} & \text{C—} & \text{PM—} & \text{M—} & = & 44 \text{ teeth} \\ 6 & 2 & 6 & 8 \end{array}$$

this theory originally gained some acceptance. However, evolutionary studies suggest that man descended from a species of ape with a dental formula of:

$$\begin{array}{ccccccc} 4 & 2 & 4 & 6 \\ \text{I—} & \text{C—} & \text{PM—} & \text{M—} & = & 32 \text{ teeth} \\ 4 & 2 & 4 & 6 \end{array}$$

which is analogous to the human dentition. Furthermore several cases of supernumerary cuspids hitherto unknown have been reported.^{2,3,4} Since mammals have

2

always had a canine formula of —, the

2

atavistic theory has largely been discounted.

Hypergenesis of the Epithelial Cord. — This theory infers that during proliferation more than two follicles are formed. Thoma and Goldman⁵ state that the dental lamina gives rise first to the deciduous follicle; then the cord produces an inter-

mediate follicle before the permanent tooth; or, after the permanent tooth forms, the epithelial cells of Malassez instead of degenerating, proliferate to form an additional tooth or teeth. This theory is more acceptable for the following reasons:

- (a) Although many supernumerary teeth appear to be congenital in origin, others do not show a familial pattern.
- (b) Supernumerary deciduous teeth have been reported in the literature.^{3,4,6,7}
- (c) Post-deciduous and post-permanent supernumerary teeth have been reported.^{3,4,6,7,8,9,10}

General Pathological Conditions.—Supernumerary teeth are invariably found in patients with cleidocranial dysostosis.⁵ Supernumerary teeth also occur in patients with harelip and cleft palate.¹¹ Here their presence may be due to the fissure which may divide a tooth bud or due to surgical trauma at an early age.

Heredity. — The interaction of transmitted genes has been suggested as a



FIGURE 2 Photograph of a supernumerary tooth visible in the palate. Radiographs of the patient's brother revealed a supernumerary tooth in this area also thus inferring a genetic aetiology.

cause of supernumerary teeth. Finn¹² has reported a supernumerary lateral incisor in fourteen members of a family in two generations. Levine⁷ and Bellinghausen¹⁰ have also reported similar cases.

Trauma. — Since supernumerary teeth occur more frequently in the permanent dentition and in the anterior regions of the maxilla, it would seem possible that in a patient with a history of trauma in this region during the growth period, the tooth bud could be divided and consequently give rise to supernumerary teeth.^{13,14}

Regardless of the precipitating cause, supernumerary teeth result from hyperactivity of the dental lamina.

AREAS OF OCCURENCE

Supernumerary teeth may be single or multiple, unilateral or bilateral, and they may occur either in the maxilla or the mandible or both.

Supernumerary teeth are found at the following sites in order of frequency:

- (a) Between the maxillary central incisors
- (b) Between central and lateral incisors
- (c) Between lateral incisors and cuspids
- (d) Between cuspids and first bicuspid
- (e) Distal to third molars
- (f) Supernumerary cuspids are very rare.

DIAGNOSIS

Supernumerary teeth may be visible in the oral cavity or they may be detected through radiographic examination. In that event exact location may be effected by the use of parallax.^{14,15} Abnormal swellings in the palate,^{7,16} abnormal diastemata between teeth,⁷ failure of permanent teeth to erupt,⁷ and crowding of erupted teeth to the mesial, distal, labial or lin-

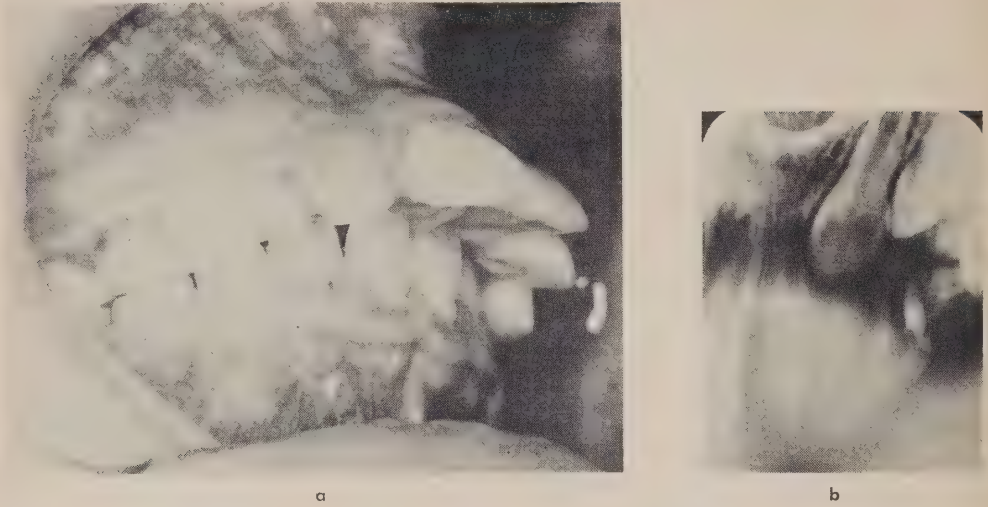


FIGURE 3 (a) Photograph of a supplemental deciduous lateral incisor between the permanent lateral incisor and the deciduous cuspid. (b) Radiograph of the area in Figure 3a revealing a slightly enlarged cuspid follicle which could become cystic if the permanent cuspid is retarded in eruption.

gual, are some of the other diagnostic signs of the presence of supernumerary teeth.

Supernumerary teeth are to be differentiated from cementoma, bone islands, root tips, and transposed lateral incisors.

Only radiographic examination can reveal the number, size, and position of supernumerary teeth.

TREATMENT

Complete surgical removal is indicated in all cases where a full complement of teeth is in evidence. Care must be taken not to interfere with the adjacent unerupted teeth during removal of supernumerary teeth. In the case of erupted supplemental teeth, the tooth in the least favourable position should be removed. But removal is contra-indicated if expensive orthodontic treatment is required to close the postextraction space or to correct a potential increase in overbite



FIGURE 4 Radiograph revealing tiny denticles as the cause of an abnormal diastema in a twelve-year old girl.

due to lingual collapse of the mandibular anterior teeth.¹⁷

PROGNOSIS

When supernumerary teeth are removed at the opportune time, the prognosis is good and resultant unfavourable conditions are eliminated. Several cases have been noted, however, where supernumerary teeth have recurred.⁹

The following are some of the unfavourable sequelae if supernumerary teeth remain undiagnosed or untreated:

Dental Abnormalities (Malocclusion).—

1. Crowding to the labial, lingual, mesial or distal
2. Abnormal diastemata



FIGURE 6 Radiograph of a small odontome causing retarded eruption of a mandibular lateral incisor in a ten-year old girl.

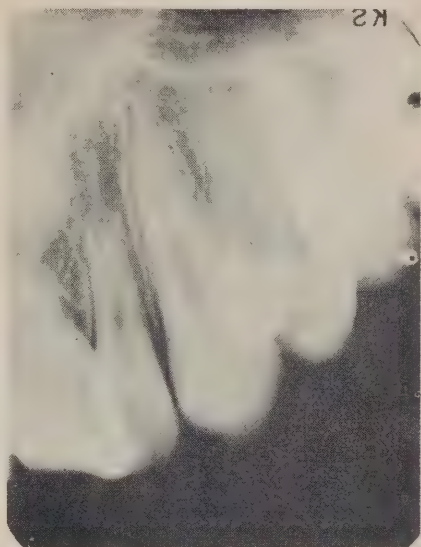


FIGURE 5 Radiograph illustrating a supernumerary tooth as the cause of root resorption in a permanent maxillary central and lateral incisor.

3. Premature loss of teeth due to resorption of roots
4. Retarded eruption
5. Inversions into the nasal cavity.

Non-Dental Abnormalities. — These are some of the extreme results, but examples have been reported:

1. Neuralgia
2. Blindness
3. Deafness
4. Muscle twitching.

Odontogenic Abnormalities. — These include odontogenic epithelial lined cysts such as:

1. Dentigerous cysts derived from the unerupted tooth



FIGURE 7 Radiograph of the sister of the patient in Figure 6, showing a supernumerary tooth causing retarded eruption of the permanent maxillary central incisor.

2. Primordial cysts derived from the tooth sac.

SUMMARY

The aetiology of supernumerary teeth is still somewhat obscure. According to the most popular theory, they may arise either from a predental follicle derived from the dental lamina; from an intermediate follicle produced by the dental lamina after the deciduous tooth follicles are formed but before the permanent tooth follicles form; or, following the formation of the permanent teeth, the epithelial cells of Malassez instead of degenerating, may proliferate and form an additional tooth or teeth.

Supernumerary teeth are most common in the anterior region of the maxilla. They are rare in the deciduous dentition. They may give rise to dental as well as non-dental problems.

Radiographic examination is the most conclusive diagnostic aid. When supernumerary teeth are removed at the correct time, the prognosis is good.

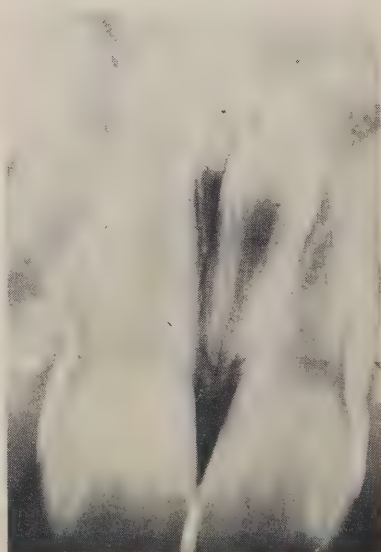


FIGURE 8 Radiograph illustrating inversion of a supernumerary tooth into the nasal cavity.

RÉSUMÉ

L'étiologie des dents surnuméraires est encore presque inconnue. Les théories les plus plausibles pour expliquer ce phénomène sont les suivantes: ces dents peuvent se former grâce à un follicule pré-dentaire dérivant de la lame dentaire; elles peuvent naître d'un follicule inter-médiaire créé par la lame dentaire entre la formation des follicules des dents primaires et celle des follicules des dents permanentes; ou, après la formation des dents permanentes, les cellules épithéliales de Malassez, au lieu de disparaître, pourraient proliférer et former une ou des dents supplémentaires.

C'est dans la région antérieure du maxillaire que se trouvent ces dents surnuméraires; elles sont rares au sein de la denture primaire. Elles peuvent occasionner des problèmes dentaires comme des problèmes qui ne sont pas d'ordre dentaire.

La radiographie établit à coup sûr leur présence. Le pronostic est excellent quand ces dents surnuméraires sont extraites à la bonne époque.

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Recruitment to the Dental Profession • Each individual dentist, by virtue of example and service in the community can create a feeling of respect which encourages others to take up the profession . . . Each member of the profession has a contribution to make (in recruitment). — G. H. Leatherman, secretary-general of the Fédération Dentaire Internationale.

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SPECIAL ARTICLE

Fifty Years Ago

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As it is now exactly half-a-century since I graduated D.D.S. from the University of Toronto, I consider that it may be appropriate to enlighten present-day readers on my experiences in this hospitable city during the academic year, 1911-12.

Having completed the training in Glasgow, I decided to continue my studies across the Atlantic and chose Toronto because I realized that I should not be among entire strangers due to this city's deeply rooted links with Scotland. How true that proved to be!

Considerable correspondence passed between the dean, J. Branston Willmott and myself. From this, I was thoroughly convinced that he was not only erudite, but also endowed with a kind and understanding disposition. He invited me, on arrival in Toronto, to join his wife and himself at breakfast in their home. They were outstanding examples of nature's gentlemen and gentlewomen. Afterwards, as he had previously arranged, several final year (I was accepted as such because of possessing a British L.D.S.) dental undergraduates called to discuss the accommodation required and accompanied me to the Young Men's Christian Association, where a list of suitable lodgings was available. We visited several readily ac-

cessible to the university, until I finally decided on a house tenanted by two middle-aged sisters. The kindness of these students did not then cease, because they escorted me to the railway station to fetch my baggage.

According to plan, I returned that evening to dean Willmott's home for dinner, later to be joined by several members of the dental faculty. Before I departed, my host, a high-principled Methodist, drew me aside and alluded to the many pitfalls which would confront me, emphasizing the inevitable trio — wine, women and song! He concluded by inviting me to accompany his wife, himself and his son, Walter (also a member of the dental faculty), and daughter-in-law to their church on Sunday, adding that he would then introduce me to friendly disposed persons. Being late in returning to my lodging, I was somewhat surprised to find both sisters waiting to greet me. Maybe, they were apprehensive lest the hour indicated an attempt to smuggle across their threshold a 'maiden aunt' or a chorus girl. Being reassured on this point, they bade me a cordial 'good night'.

Unfortunately, I soon experienced a 'fly in the ointment'. A young lady (the 'only other lodger') was a student at the Royal Conservatory of Music. She practised the piano assiduously for hours at a stretch, naturally disturbing my studies. I endured this as patiently as possible for a few

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weeks, but eventually decided tactfully to inquire if anything could be done to enable the young lady to practise and me to study. These sisters were wonderful psychologists. They suggested that I should join them and the pianist at supper (I had all my meals including breakfast in a nearby restaurant) adding that they were confident everything could be satisfactorily arranged. The evening passed very pleasantly and all too quickly — not surprising as my delightful hostesses made me extremely welcome. Naturally, I was pleased when the noise became less and I was able to concentrate on my studies — but alas for not longer than about two weeks! It was then necessary to remove to another address. There was no dispute; we parted on friendly terms.

THE FACULTY STAFF

In Toronto, undergraduates were, I found, accepted and treated as responsible adults by every member of the dental faculty. For instance, the professor of Operative Dentistry, A. E. Webster (later to succeed J. Branston Willmott as dean), at the close of a lecture very kindly invited me to call at his home on Sunday forenoon. This I did and he drove me to a magnificently appointed country club, of which he was a member. After lunch we played a round of golf. I did not enlighten him that this was the first occasion I had indulged in Sunday games. Although a reasonably good player, I made every conceivable mistake, doubtless due to an innate conviction of being guilty of a serious crime — the outcome of a strict Presbyterian upbringing! I sliced, pulled, or missed shots with such uncanny regularity that I was defeated by ten up and eight to play! Besides, I lost three of my host's golf balls!

Incidentally, I still recollect a very happy visit that this most genial man paid me some years later. In an intensely interesting talk which embraced dental education, he expressed two fundamental

truths that time has not effaced from my mind. They were: whenever you detect 'window dressing', rest assured that it is evidence of superficial knowledge; and judge a dental school not by what someone has told you about it, but from your own assessment of its cultural background. He added that dental history should play a vital role; and somewhat casually remarked that no dentist could be considered efficient, unless he paid strict attention to detail just as a good shoemaker, if he does his job properly, polishes the heels as well as the toes!

Another professor, A. W. Thornton, who later became dean of the Faculty of Dentistry at McGill University, invited me during the Christmas vacation to not only his home, but also his office to watch him execute treatment for patients and how he dealt with them — vitally important factors.

Then there was G. M. Hermiston, who possessed a degree in dentistry and in law. He was the lecturer on Dental History and possessed the innate and somewhat unusual gift of being able to present his subject in an arresting manner. This appealed tremendously to me because, although interested in history generally, despite my earlier dental studies, I was totally unaware that our profession possessed such a wonderful heritage. Consequently, from then onward this became my hobby, although it was many years until I could develop it in any marked degree.

W. E. Cummer, a brilliant inventive genius, was the professor of Prosthodontics, and singularly kind to me. On several occasions, when classes were over for the day, he invited me to remain behind to see him devise and construct special apparatus. He, subsequently, became dean of the dental faculty of the University of Detroit. However, it did not surprise me to learn that he relinquished this in a comparatively short time — actually he was not temperamentally suited. Besides, he was undergoing a fundamental spiritual conflict. He was a gifted musician, and the atmosphere of



The School of Dentistry of the Royal College of Dental Surgeons of Ontario at 96 College Street, Toronto, circa 1901. Reprinted from the cover of "Curricula", 1901-2.

Roman Catholicism so appealed to him that he became a convert. Although middle-aged, he then trained for, and was admitted to, the priesthood.

Walter E. Willmott and his wife paid me an outstanding compliment by inviting me, along with only one other dental undergraduate (Harry Holmes), to be a guest at their delightful and hospitable home in Rosedale, on the occasion of their silver wedding anniversary. Incidentally, my companion (an outstanding ice hockey player), before becoming a dental student, had participated actively in the 'Cobalt Rush'. This man of many parts was indeed a very genial and entertaining personality.

Mr. Charles Daly, who owned the most up-to-date laboratory in Ontario working exclusively for the dental profession, extended a cordial invitation for me to spend there as much time as possible and move around the different departments. I freely availed myself of his kindness. He and his highly skilled assistants willingly showed me everything at the various stages. Such experience proved of inestimable value. I was somewhat amused on my first visit to read, above

the reception desk, a framed notice: "Your impression of me will depend upon your impression to me!"

UNDERGRADUATE LIFE

Having mentioned the teaching, what about undergraduate life? It was traditional for each year's freshmen, sophomores, juniors and seniors to hold meetings at regular intervals. At the first one, a class president was elected. This honour was no sinecure; e.g. should it be decided to bring a suggestion or a grievance to the notice of the dean, the duty rested on him. Not only undergraduates but also members of the faculty cordially welcomed this procedure, as it promoted a harmonious bond which persisted long after graduation.

As a rule, Canadian dental students were older than those in Great Britain. They also seemed to me to be more versatile and generally keener on their studies. This was due to two factors. Firstly, they had not infrequently tried other occupations. Several had been engineers and

this training proved advantageous, enabling them to handle tools skilfully. Thus they had decided upon dentistry, only after careful consideration — not merely drifting into it. Secondly, cash was often restricted. Consequently, they were apprehensive lest failure would entail further expense, which could be ill afforded. In order to supplement their resources, many dental undergraduates spent Saturday afternoons and university holidays serving customers in departmental stores, such as Eaton's and Simpson's. To me the most striking and happy feature was an entire absence of snobbery.

Being naturally anxious to see Niagara Falls, I arranged with another student (an American, George Spence) to go there for a weekend during the Christmas vacation. The morning of departure was excessively cold (I later learned that the temperature had been 30 degrees below zero). Not being properly attired I developed minor frostbite, which my friend 'cured' by rubbing with snow. He, on the other hand, appeared to be more suited for a sojourn in the Arctic regions. He wore a fur cap with ear-protectors, fur

gloves and an overcoat with fur collar and cuffs. To even the most casual observer we must have appeared an oddly assorted pair.

The journey proved uneventful, until an immigration officer boarded the train. My replies to questions convinced him that I was neither a Canadian by birth nor an American citizen. His remarks were restricted to: "You will require to get out at the Suspension Bridge and register". Little did I visualize the ordeal ahead! As we entered the station, he reappeared at my side as if from nowhere. I alighted from the train accompanied by my friend who, of course, did not require to register. At this stage, I was confronted by another United States official, who instructed me to fall in at the head of a two-deep procession comprising Italians, Armenians, Greeks, Jews, Poles and Galatians. Only then did I realize why the Apostle Paul wrote to the last-mentioned instead of visiting them! An order was given to march forward, incidentally to the jeers and catcalls of passengers on the departing train.

I was fortunate to be the first to be directed into a small room on the right

The Faculty of Dentistry, University of Toronto is the successor to the former School of Dentistry of the Royal College of Dental Surgeons of Ontario. The present building was formally opened at a special convocation on November 25, 1959.



side of the building, the remainder being hustled into a waiting-room on the left. There I was scrutinized by officials. My full name was recorded with age, height, weight, colour of eyes, etc. After a perfunctory medical examination, I was cross-examined as to why I was entering the United States, how long I had been in Canada, how much money I possessed, how long I intended to remain in the States and where, etc. I was then informed that I must pay a poll tax of ten dollars, which would be refunded when I returned to Toronto. I received a vagrant's card with full personal description for identification purposes on re-crossing the Suspension Bridge.

Now to return to the much pleasanter theme of undergraduate life. It was fully recognized that studies and leisure must be judiciously blended. Consequently, I can vividly recall an unusually amusing evening. A few of our Year arranged to have a 'night out'. This began by sampling Canadian rye whisky which, to me, tasted like a mixture of molasses, senna and fire! I therefore handled it with Scots caution, otherwise I should not now be able to recollect the proceedings. Afterwards, we made tracks for a show where every artist was assured of our lusty applause. We thoroughly enjoyed ourselves.

Maybe I ought to remark on the dental students' society — The Royal Dental Society. This was conducted on an entirely different pattern to similar societies in the Old Country. Meetings (always partly professional and partly social) were well attended by first, second, third and fourth-year undergraduates, who read papers which were always freely discussed. Afterwards, we were entertained by a comedian or a vocalist whose services were paid by the Society. All of us looked forward with considerable pleasure to these social evenings, because they consolidated friendships between those of different years.

I much preferred the Canadian to the British method of assessing a student's progress. For instance in the final year weekly quizzes and monthly written

examinations were held to determine capability. The results of these were assessed at 20 per cent of the marks required for the final. As these figures were automatically forwarded to the dental faculty, a student, whose progress was considered unsatisfactory, was interviewed by the dean and informed that, if he hoped to graduate, he must pay more attention to his studies.

In due course, there was the time-honoured traditional final year dinner with the class president in the chair. This is a happy and unfading memory, because professors, lecturers, assistants, clinicians and undergraduates met on a basis of equality — a delightful feature of Canadian university life. The principal guest was our dean, Dr. Willmott, who never derived any satisfaction from merely correcting students. Instead, he viewed everything in their best interests; consequently, he was loved by all. His opening remarks were rendered inaudible by the singing of: "Yes, we will gather at The River, the beautiful, the beautiful River . . .", and a popular ditty extolling the virtues of alcohol. However, he remained unruffled throughout. His patience seemed almost infinite.

Each undergraduate was called upon, in turn, to stand and say something. There were few dull moments. Appropriate interjections were frequent because the others, particularly after four years' studying together, were well aware of a speaker's foibles. From these, even members of the staff were not immune. Many were singled out — mannerisms, idiosyncrasies and incidents which had occurred during the session — for comments that never bore the slightest trace of malice. Truth certainly was wearing its boots that evening!

There was, also, the annual address delivered to the graduating class by a distinguished member of the profession. For our Year the choice was C. N. Johnson, one of the greatest stalwarts of his time. Seldom has the writer listened to such wise and helpful guidance given to those starting to practise dentistry. Incidentally,

I am happy to add that I was privileged to correspond intermittently with him until his death.

GRADUATION AND DEPARTURE

I (generally known as 'Scotty') received the diploma of Licentiate in Dental Surgery from the Royal College of Dental Surgeons of Ontario. However, I was particularly proud to be the first British licentiate to graduate Doctor of Dental Surgery, especially as it was *cum laude*. (A secret! Maybe it was due to fear of failure that I studied really hard.) This was conferred on me by the cultured, humane and erudite president and vice-chancellor of the University, Robert Falconer. At the conclusion of a colourful and impressive ceremony, who should most unexpectedly be the first lay persons to congratulate me? They were the two excellent women, in whose home I had resided during my early weeks in the city! Needless to say, this did strike a chord!

I should mention that I had spent several Saturday evenings with the Highlands and Lowlands Society, there meeting many English, Scottish and Irish persons, who were upholding the best traditions of the Old and the New Worlds. Several of them approached me, and all sincerely meant what they said: "If you start practice in Toronto, we will support you to the hilt!" Nevertheless, I had decided to return to Scotland, my passage having been booked months earlier. It was far from easy to decline such a tempting offer from such wonderfully fine people. My regrets did not end there. Due to the time-factor, I was unable to accept any of the very cordial invitations extended by about a score of graduates to visit them at their homes. Consequently, it was with a sense of deep emotion that I bade farewell to a considerable group of them as well as many others who, to my great surprise, had assembled at the railway station. Many 'bunny-hugged' me,

all joining lustily in singing: "Will ye no come back again". Alas, chronic bronchitis, asthma and tobacco smoke have, for many years now, rendered this impossible. As the train started for New York, there was the resounding dental school yell, 'Hya Yaka . . .' I had indeed been living in a world of extraordinarily happy, happy days, in which neither jealousy nor a pretence of friendship ever once reared its ugly shadow.

Before sailing from New York on the homeward journey, I was privileged to accompany Professor A. W. Thornton to the New York State Dental Meeting in Albany (1912). There I was introduced to many then outstanding figures in American dentistry. Among them I recall Ellison Hillyer (the president), Edwin Darby, Victor Jackson and Herbert Pullen. However, I much regretted that, although invited, C. N. Johnson, T. W. Brophy and Leon Williams were unavoidably absent.

Extensive floor space was devoted to eighty-seven chair and table clinics, besides an attractive children's oral hygiene section staged by Rochester's Eastman Dental Dispensary.

Finally, as I am the only British dentist to have had the following experience, I must not fail to recount it. Being naturally anxious that my Toronto degree and Ontario licence should be entered in the British Dentists Register, and fully convinced of the justice of the claim, I determined to 'take the bull by the horns' and damn the consequences. I, therefore, carefully studied the literature issued by the General Medical Council (then the governing body) concerning overseas qualifications. From this I learned that it was possible to register these, only after official sanction had been granted, followed by the payment of £1 for each. I decided to reverse the process by forwarding a cheque to the registrar, with a request to include my Canadian qualifications in the Dentists Register. I awaited developments with considerable interest, but the suspense was of short duration. My cheque was returned with a very courteous letter explaining that this was

possible only as the outcome of a successful 'Prayer' to the Privy Council. In consequence, I requested and received a lengthy document to be forwarded to the dean of the faculty of dentistry for attestation by the various professors, lecturers and clinicians. In due course, it was returned to me and sent to the regis-

trar. Following a necessarily prolonged interval, I received a letter officially informing me that my 'Prayer' had been granted, and that the General Medical Council had instructed the registrar to enter my additional qualifications in the Dentists Register.

70 Great George Street

RESEARCH ANNOTATIONS

THE FORMATION OF CELLS CONCERNED IN BONE AND TOOTH DEVELOPMENT

A. M. Hunt and K. J. Paynter, Faculty of Dentistry, University of Toronto, Toronto, Ontario.

Conflicting reports continue to appear with regard to the origin of the various cells concerned in bone and tooth development, and their migration into the functional cell layers. In order to follow the histo-differentiation of cells of the enamel organ, odontoblast layer and periosteum, fourteen two-day old guinea pigs were injected with H^3 thymidine ($1 \mu c/Gm.$) and sacrificed at intervals of 15 minutes to 24 days. Autoradiographs were obtained from longitudinal sections of the lower jaws.

Undifferentiated cells of the oral epithelium give rise to stratum intermedium and outer enamel epithelial cells. These in turn have the capacity to form stellate reticulum cells, pre-ameloblasts, or stra-

tified squamous epithelium depending on environmental conditions.

Odontoblasts originate from mesenchymal cells of the pulp and are not able to reproduce themselves.

Osteogenic cells in the periosteum become osteoblasts which in turn become osteocytes. Neither osteoblasts nor osteocytes incorporate new nuclear desoxyribosenucleic acid which is indicative of mitotic activity. Osteoclasts are aggregations of single cells and at least some of these single cell units were formed 4 days previously.

SYNTHESIS OF COLLAGEN BY ODONTOBLASTS USING TRITIUM LABELLED GLYCINE

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After injection of tritium labelled glycine as well as after injection of labelled proline it is possible to show by means of radioautography that a collagen precursor is elaborated in the cytoplasm of odontoblasts of growing teeth and promptly de-

posited outside these cells to become the collagen fibres of predentine. Similar results obtained with osteoblasts suggest that the two steps observed (cellular elaboration of a collagen precursor; release outside the cell as collagen fibres) may exist in all sites of collagen formation.

AN INVESTIGATION OF THE EFFECT OF HYPOPHYSECTOMY AND HORMONE REPLACEMENT THERAPY ON THE ORAL TISSUES OF FEMALE RATS

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The present investigation arose from research carried out on human females who suffered from hypopituitarism. Out of twenty-six patients with hypopituitarism (anterior lobe) studied, three had lost all remaining natural teeth within eighteen months of the hypopituitarism occurring. The remaining twenty-three patients had lost many, if not most, of their natural teeth within one year of the occurrence of the post-partum necrosis of the anterior pituitary lobe. The reason for the loss of teeth in every case was "pyorrhoëa" or "gum disease."

In all of the cases studied the reason for the hypopituitarism was post-partum necrosis of the anterior lobe. In every case where teeth were standing, there was clinical and radiographic evidence of advanced periodontal disease. The effect of hormone replacement therapy was studied; an amelioration of clinical signs of the disease, and histological evidence of gingival tissue response was obtained where 11-deoxycortone acetate was administered. A further and more favourable response was obtained when testosterone was administered and also to a lesser degree when oestrogen was administered. When the hormones were withdrawn, histological and clinical evidence

indicated a retrogressive reaction on the part of the gingival tissue.

In view of this evidence, it was felt that more detailed study on hypophysectomized rats would be profitable.

It should be noted that none of the hypophysectomized rats responded so dramatically to loss of the anterior lobe of the pituitary gland as did the human subjects. The results so far indicate an increase in activity of the cells of both the epithelium and connective tissue following the administration of cortisone for two weeks, and also following cortisone and oestrogen for one week, but when cortisone and oestrogen were administered for two weeks, following two weeks' administration of cortisone, there was decreased activity of the cells of both the epithelial and connective tissue of the gingivae, and an opening of the gingival capillary bed.

EFFECT OF INCREASED DIETARY PHOSPHATE ON TOOTH DEVELOPMENT IN THE HAMSTER

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The purpose of this study is to determine whether or not increased dietary phosphate given to the mother during the prenatal period and to the young postnatally, causes changes in tooth morphology and eruption time. Detection of changes would suggest the possibility of a systemic mechanism for the cariostatic action of increased dietary phosphate.

Nine female hamsters were divided into groups A, B, and C and were put on the following diets: Group A—a basic cariogenic diet (Nizel and Harris); Group B—a basic cariogenic diet with Na_2HPO_4 added to double the total phosphorus value; and Group C—a basic cariogenic diet with Na_2HPO_4 added to quadruple the total phosphorus value.

The animals were bred and the litters were kept on the same diet as the mothers. One of the young from each litter was sacrificed 0, 2, 6, 8, 18, 28 and 34 days after birth so that studies could be made of the developing molar teeth at various stages. The jaws were preserved in 10 per cent neutral buffered formalin. Lower left molars were decalcified, embedded in paraffin and serially sectioned. Upper left molar blocks were cut into serial ground sections; lower right molar blocks were embedded in styrene plastic and the undecalcified first molars were serially sectioned at 4 microns. Every tenth section was saved and prepared for microradiography at 3 K.V.P. and subsequent haematoxylin and eosin staining. Upper right molar blocks were radiographed at 15 K.V.P., and photographed to record the degree of eruption of the teeth. The first molar was removed and its mesio-distal length was measured using standardized photographic procedures. The angle formed by the mesio-buccal and the middle buccal cusp was also recorded on drawings made by projecting the photographic negatives.

Data on the growth, mineralization and eruption times of the molars of hamsters on the normal diet will be compared with that of animals on the high phosphate diets.

TOPICAL STANNOUS FLUORIDE AS A CRIES PREVENTATIVE FOR PRE-SCHOOL CHILDREN

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Three hundred and sixty children from 2 to 4 years of age were used to determine if topical application of 8 per cent stannous fluoride solution reduces decay in the deciduous dentition. The annual stannous fluoride application was given to 180 children; the other 180 children, a

control group, received distilled water placebo.

All subjects received clinical and bite-wing radiographic examination from the same dentist who was unaware whether a child was assigned to the fluoride or control group. The radiographs were interpreted without knowledge of the child's treatment group. Caries experience data was confined to the deciduous cuspids and molars. The dental hygienist performed a thorough prophylaxis for each child and applied fresh stannous fluoride solution or placebo to each alternate child. The same procedure was repeated one year and two years later.

At the end of the two years, 244 children were still available to the project: 122 children in the control group and 122 children in the fluoride group. The control children had average DEF surface increments of 2.82 and 6.75 after one and two years of the study, respectively. The stannous fluoride children had average DEF surface increments which were 18.5 per cent lower after the first year, and 29.2 per cent lower after the second year than those of the control group. The fluoride treatment appeared equally effective for children 2.3 and 4 years of age. The reduction in DEF surface increment due to stannous fluoride treatment was slightly greater for interproximal surfaces (32 per cent) than for occlusal surfaces (22 per cent).

STUDIES OF THE SUPERFICIAL ZONE IN ENAMEL CRIES

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In longitudinal sections of 150 initial carious lesions the superficial mineralized zone was clearly visible in 48 cases, less so in 32 cases, and in 70 cases there was no particular zone at the surface.

In polarized light, the zone is negatively birefringent, and the rods are sometimes poorly distinguished. Seen in re-

flected light on surfaces ground perpendicularly to the rods, the zone is semi-translucent, either with a homogeneous or a cloudy aspect with faintly visible rods. Particularly translucent rods are sometimes scattered in the subjacent decalcified area.

On teeth submerged for three hours in toluidin blue, some initial carious lesions were stained and some remained white or brown. In the latter a mineralized superficial zone was found; when it was removed by grinding, the deeper parts of the lesion stained rapidly.

Teeth with 145 carious lesions were submerged in calcium phosphate solution

labeled with radio-active phosphorus. Afterward, they were sectioned, autoradiographs were made and the sections were examined with polarized light. The phosphate did not penetrate into 42 lesions even after being submerged for four days. In these lesions, the superficial zone is mineralized. The phosphate penetrated into all other lesions as early as four hours after immersion and it was visualized on the autoradiographs. In most of these lesions the mineralized superficial zone is absent, in others it is incomplete.

These findings suggest that the superficial zone determines the penetration of substances into the lesion.

ABSTRACT

PREVENTION OF DENTAL CARIES

B. G. Bibby, *J. Pros. Den.* 11:1124,
November-December 1961

The prevention of dental caries depends on developments which take place prior to cavity formation, that is, on the outside of the tooth. The conditions which determine whether the enamel surface will remain intact or be breached by dental decay may be grouped as (1) factors related to the saliva, (2) factors related to the structure of the tooth surface, and (3) factors related to the bacteria-saliva-food complexes which form on the tooth surface.

The enamel surface is the site at which attempts at caries prevention can most profitably be concentrated. In this connection, it is noted that saliva not only serves to keep the tooth surface clean but may, in some way, reinforce it and make it more resistant to dental decay. At the present time, methods for increasing the protective effect of saliva are not known.

It has been shown that the tooth surface seems to undergo reactions with its oral environment, resulting in "chemical maturation" which makes it more resistant to the destructive forces of dental decay. The action of fluorine is an example of such an effect and makes its use, either in water supplies or as applications to the teeth, the most practical procedure for the partial control of caries. That fluorine has such an effect suggests that other agents, including natural food constituents, might also influence the destructibility of the enamel surface.

Attempts to control the bacteria on the tooth surface offer little promise of practical caries prevention. The best hope of reducing the acid attack from bacteria-foodstuff complexes rests in reducing the frequency of eating sweet foods. This is the only effective dietary recommendation which can be made at present. The advantage of substituting liquid or other carbohydrate foods of low cariogenicity for those with high cariogenicity suggests a promising approach to the dietary control of caries.

EDITORIALS

See No Evil, Hear No Evil, Speak No Evil

"Our dental society was dismayed at the printing in the Journal of the distorted views of our (provincial) labour group in their presentation to the Royal Commission on Health Services," recently wrote an earnest but perturbed reader, adding "it is regrettable that this item was published because the Journal will be read by many who accept these excerpts as representative of the views of our dental profession . . ." We sympathize with the reader's opinion but must point out that this type of comment is based on a real misconception of the role of a professional publication.

In the first place, the expression of divergent views on health issues, in a free society, is an ever-present problem. The health professions perhaps more than any other group are guilty of a lack of awareness of the opinions of other elements in society which, like the labour movement, constitute a powerful social force. Without such an awareness, how can the dentist keep track of the broad lines of development, the growing edges of his profession in a changing social environment? Reader misinterpretation is another problem which, as long as the printed word remains a medium of communication, will ever be with us. How should a responsible publication deal with these questions?

There are two important considerations

at issue. Firstly, there is the question of whether the exposure of views which are at variance with those of the dental profession is proper in a profession-sponsored publication. Secondly, there is the question of whether such a publication should refrain from reporting news which might be misinterpreted by certain readers.

Within reasonable limits exposure of the dentist to varying viewpoints is helpful in sharpening his intellect, preparing him for an attitude of suspicion toward dogma and empiricism and generally cultivating a critical attitude toward the plethora of opinions which assail him from every quarter. Such news and views are only of value, however, when they can be properly communicated to the practising dentist. Provided no obloquy is involved, the factual reporting of various viewpoints on health issues of public concern is a prime responsibility of any mature professional publication. To do less would be to render a disservice to the readers.

The inevitable possibility that some readers might misconstrue the intent of a printed report does not in any way detract from the obligation of publishing such reports. A publication which is forced to withhold from its pages any item that might conflict with the tastes of some of its readers might just as well

cease publication altogether. Surely the basic issue is this: the writer conveys but it is the reader who interprets meanings. No matter how careful and factual the reporting, no-one can guarantee the construction which the reader places on information communicated to him. Notwithstanding this hazard, it is better to permit the reader to exercise his own power of discrimination than that he be spoon-fed.

It is in this belief that the *Journal of the Canadian Dental Association* will

continue to present its readers with a broad view of dentistry. Undoubtedly further requests may again be made to suppress certain information or, at least, to present predigested interpreted news to the reader. To provide such a diet, however, is insulting to the dentist, sedative rather than stimulating. Surely it is better to "suffer the pangs of acute mental indigestion brought on by a study of (controversial) material than to live in the state of mental torpor induced by over-simplification of dogma".

The Positive Role of Journal Advertising

From time to time readers of the *Journal* voice their concern over certain items appearing in the advertising columns of this publication. Occasionally their criticisms are valid and helpful; sometimes however, they are unfounded and based on misconception of the essential purpose of ethical advertising.

The dental supply industry's contribution to the improvement of dental care and the betterment of dental health has been notable. In this endeavour the industry has been a close and trusted ally of the dental profession. The industry's role in this partnership involves the development, testing and perfection of an ever-increasing range of dental supplies, equipment and materials. Those that meet the high standards demanded of them are launched in a highly competitive market and must be sold in order to survive. But even a good product will not become widely sold unless it is widely known. This, of necessity, involves advertising. Since dental products are either used by or dispensed on the advice of dentists, the advertising must logically be directed to

dentists. With the dentist as a major target, it is proper that he should voice his opinions concerning those features of dental advertising which he considers detrimental. It is also logical that the advertiser would be interested in the reactions of the target of his advertising. This does not deny the value of sound, reliable advertising, which on the contrary has become more important than ever before.¹

The adoption in 1961 of a code of advertising standards by the Board of Governors emphasizes recognition of this fact by the dental profession. To secure the privilege of advertising in the *Journal*, a product and the claims made for it must meet the following requirements:

1. Claims made should not be deceptive or misleading.
2. Claims made for superiority should be based on adequate evidence, acceptable to the Canadian Dental Association.
3. Unfair comparisons which disparage a competitor's product or service, as to

price or quality, should not appear in the contents.

4. Excerpts from published papers should not distort the meaning intended by the author.

5. In general all advertising shall be in keeping with professional ethics and not violate any government regulation or statute.

Despite these requirements, last year's increase in Journal advertising revenue, at a time when business publications showed declines in advertising lineage of up to 8.8 per cent from 1960 levels, is particu-

larly gratifying. Advertisers evidently regard the Journal as the best medium through which to reach their best market in Canada.

Good advertising has had and will continue to have considerable educational influence on the practising dentist. Strict adherence to advertising standards promotes this aspect of graduate dental education and assures the reader that Journal advertising can be relied upon.

REFERENCE

1. Graham, D. C. The Positive Role of Pharmaceutical Advertising. Editorial. *Canad. Med. Ass. J.* 84:668, March 25, 1961.

BUREAUX, COMMITTEES AND COUNCILS

Comments on the Survey of Dentistry in the United States:

4. Dental Research

Council on Research

The initiation, growth, aims and problems of dental research in Canada and the United States are remarkably similar in spite of the differences in historical development, geography, politics, etc., that exist between the two countries. It is not surprising that research has similar aims in both countries, since research workers in dentistry are universally working towards the common goal of eventual prevention, and interim control and better treatment of dental disease. It is surprising, however, how closely the history of development and financing of the two

programs parallel one another, and therefore how much alike are the current needs.

The dental research programs in Canada and the United States were started by the dental profession, which also provided the initial money to support them. In 1912 in the United States the National Dental Association recognized a need for systematically testing and standardizing dental materials, and set up a special committee on scientific foundation funds to do this, which later became the Scientific Foundation and Research Commission. Initially the activities of this organi-

zation were subsidized by voluntary contributions from dentists and dental societies. The commission eventually became the Research Institute of the National Dental Association, which was finally dissolved when testing became available through the National Bureau of Standards.

In Canada a similar beginning was made, but the research program was established on a much broader basis. At the end of the first world war a campaign to raise funds for the support of dental research was conducted among the dentists of Canada. Nearly \$17,000 was raised which was used to establish the Canadian Dental Research Foundation. The founders of this organization were G. R. Anderson, H. K. Box, H. Clark, F. J. Conboy, W. E. Cummer, G. Gow, G. G. Hume, H. M. Lancaster, A. D. A. Mason, W. M. McGuire, R. G. McLean, S. M. Richardson, W. Secombe, W. G. Thompson and A. E. Webster. The original stated purpose of the Foundation read as follows:

(a) "To carry on among the dental associations and dental colleges of Canada an intensive study of perplexing problems which confront the dental profession, and to investigate scientifically current methods in dental practice. Where possible the work is done by recent graduates who during their college courses have shown special ability in this line of work. For this purpose fellowships are to be established in the dental colleges.

(b) To give assistance through laboratories, library, and other facilities at colleges to members of the dental profession in their efforts to find satisfactory solutions of difficult problems which are met in practice.

(c) To give financial or other assistance to such worthy members of the profession as may be struggling with great problems and making sacrifices far beyond their means.

(d) In short to serve humanity and the dental profession by investigation, study and research in connection with oral defects and disorders and their consequent systemic lesions and all matters pertaining to science and practice of dentistry."

Broader, more liberal, and more visionary terms of reference are hard to imagine.

COMMUNICATION

The report of the American Survey states "The new knowledge that research produces must be communicated to be understood and must be applied to have value." Communication occurs either through verbal reports at meetings or through written publications. The largest annual meeting of dental research workers is that of the International Association of Dental Research, an organization to which many Canadian dental research workers belong.

Canadians also contribute to the meetings of organizations such as the American Association for the Advancement of Science or the Gordon Conference on Bones and Teeth, both of which hold combined meetings of dentists, biochemists, biophysicists, electron microscopists and others to discuss current knowledge and advancement in the broad field of biological investigation.

The first strictly Canadian meeting of dental research workers was held in Toronto, Ontario, on October 30 and 31, under the auspices of the Canadian Dental Research Foundation and the Canadian Dental Association. This conference was received with widespread enthusiasm and may well set a pattern for the future.

The Canadian Federation of Biological Societies is the only organization in Canada whose annual meeting affords an opportunity for Canadian research workers in basic disciplines such as physiology, biochemistry, anatomy, pharmacology, etc., to meet together to hear reports and to discuss matters of mutual interest. Perhaps it may eventually become logical and practical to set up a dental section within this Federation.

There is no journal in Canada devoted solely to the publication of dental research articles, and it is difficult to envisage the need for such a publication for some time. Reports of Canadian research work are occasionally published in the *Journal of the Canadian Dental Association*, and from time to time during the past consideration has been given to establishing a section on research in this Journal, such as is done in others like the *Journal of Periodontology*, etc. Most Canadian research workers, however, generally submit their findings for publication to those American journals devoted to this purpose, i.e. the *Journal of Dental Research* or *Archives of Oral Biology*. Work may also be published in other scientific journals when it has wider interest, e.g. the *Journal of Biochemistry*, *Journal of Anthropology*, *Journal of Anatomy*, etc.

FINANCES

In the United States during the academic year 1924-25 only 14 out of the 43 dental schools then in existence were conducting programs of dental research, and the amount of money spent for this purpose by each of the fourteen schools varied from \$109 to slightly more than \$16,000. The total amount spent was just over \$41,000 — an average of less than \$1,000 per school for the 43 schools.

In 1958 the U. S. Survey reported that 45 of the now 47 dental schools were supporting research. The amount of available research money had risen to \$4,500,000 — an average of slightly more than \$100,000 per school. In addition to this vastly expanded program in the schools, many other areas such as hospitals, public health agencies, the Veterans' Administration, and industry were also doing dental research.

The most significant impetus for this expansion came through the great increase in federal funds made available to support dental research in the United States. In 1948, the American government established the National Institute of Dental Research within the National Institutes of Health. This is now the largest centre for dental research activity in the world. Funds for the construction of the N.I.D.R. building did not become available until 1958-59, and the building was completed in 1961. Until about 1956, the U. S. Congress appropriated approximately \$800,000 per year to support dental research. In 1956, as a result of action by the American Dental Association, the American Association of Dental Schools, and others, Congress increased this appropriation to a little more than \$6,000,000, to be used to support both extra- and intramural dental activities including research. By 1960 this grant had increased to more than \$10,000,000. The primary extramural function of the

N.I.D.R. is to give financial support to research projects in dental schools and non-federal research centres. Such support has increased from \$200,000 in 1950 to nearly \$3,500,000 in 1959.

In Canada, from 1920 until about 1944, the income from the Canadian Dental Research Foundation was the sole source of funds to support dental research. This amounted to about \$500 per year, which was largely used to finance the publication of research findings. In 1944, the Canadian Dental Association recognized the need for more personnel trained in research methods, and set up research training fellowships. The amount of money appropriated for this purpose has grown from \$1,500 to nearly \$10,000 per year, representing 4-5 per cent of the annual budget of the Association.

At about the same time (1945) the National Research Council established the Associate Committee on Dental Research. This group is one of a number of special advisory committees within the Council, each of which is allocated a sum of money every year from Council funds for support of some special area of research. The action of each committee is, of course, subject to ratification by the National Research Council. This source of federal funds has now become the major support for dental research in Canada.

In addition, further support has been received through public health grants of the Department of National Health and Welfare, through the United States National Institutes of Health, from Canadian industry, and from philanthropy. The estimated financial support for dental research in Canada for 1961 is shown in Table 1.

This table does not include the amount spent on intramural research by such organizations as the Royal Canadian Dental Corps, and the Department of National Health and Welfare. The \$253,000 shown is

Table 1 Source of funds to support dental research in Canada in 1961.

Source	Amount	Per cent
Federal	\$175,000	70
Universities*	26,000	10
Canadian Dental Association	10,000	4
Philanthropy	12,000	4
Industry	10,000	4
Foreign	20,000	8
Total	\$253,000	100

*Based on the 15 per cent of grants allowed to the universities by the U.S. Department of Health, Education and Welfare as payment of overhead.

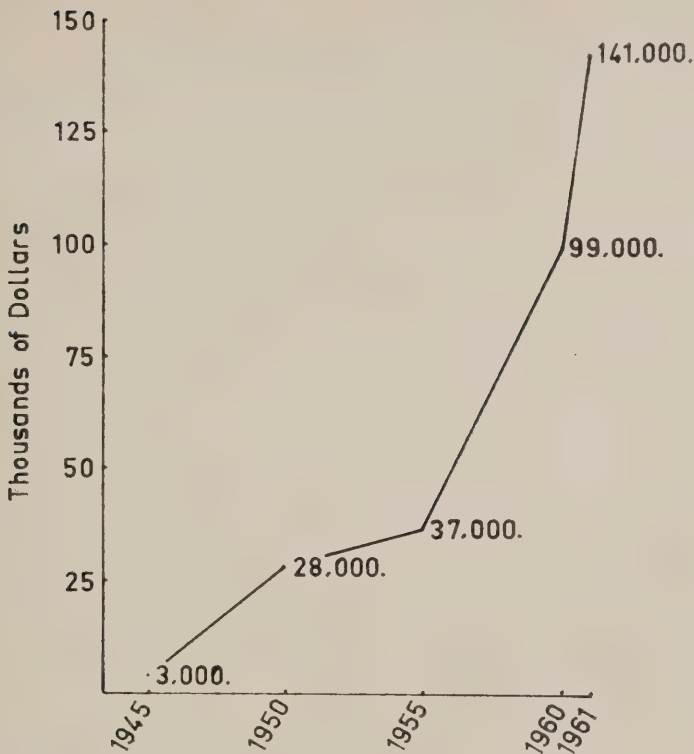


FIGURE 1 Funds allocated for dental research by the National Research Council of Canada, 1945-1961.

TABLE 2 Comparison of expenditure for medical and dental treatment in Canada, 1961, based on a population of 20 million.*

Category		Expenditure in dollars		Treatment:research ratio
		Treatment	Research	
Dental	Total	100,000,000.00	250,000.00	400:1
	per Capita	5.00	0.125	
Medical	Total	1,400,000,000.00	10,000,000.00	140:1
	per Capita	83.00	0.50	

*Population on January 1, 1961: 18,041,000.

equivalent to approximately \$42,000 per school — a sharp contrast to the \$100,000 per school available in the United States.

The growth of dental research in Canada has been rapid, particularly over the last five or six years, and is best indicated by

the annual amounts allocated to support dental research by the National Research Council since such support became available (Figure 1). Even so, dental research still lags far behind medical research in Canada (Table 2).

In 1961 Canadians will have spent approximately five dollars per capita for dental treatment, and only one and one-quarter cents for dental research. In medicine the corresponding figures are eighty-three dollars for treatment and fifty cents for research. The relative proportion of treatment vs. research in dentistry is 400:1, and in medicine 140:1. At the same time it has been recognized that the amount of money spent on medical research in Canada is still much less than it should be.*

Canadian dental research development also lags far behind that in the United States, where federal research support in the schools increased from \$200,000 to \$3,500,000 from 1950 to 1959 — a factor of 17½. In Canada, the corresponding figures are \$28,000 and \$77,000 — a factor of less than 3. Further growth in dental research in Canada will not come simply by providing more money, however. We need more schools in which to do the work; we need school administrators who recognize research as an essential product of a school; and perhaps we need a Canadian National Institute of Dental Research.

RESEARCH PROJECTS

Both in the United States and Canada the research projects undertaken by dental investigators utilize the same biological and physical disciplines common to all biological studies. As revealed in the American Survey, the most commonly used basic science discipline in dental investigation was biochemistry, although others such as histology, epidemiology, crystallography, etc. were also widely used. When the American studies were classified as to clinical entity, most work was devoted to dental caries, with periodontal disease second. A large number of investigations on dental materials are going on in the United States — an interesting observation in view of the fact that the first dental research in the U. S. was materials research.

No exact figures are available from Canada for comparison. The 1959 Canadian Dental Association survey of dental research

indicated that such basic biological disciplines as genetics, radiation biology, physiology, pharmacology, etc. were being employed to investigate problems of dental and oral biology. Clinically, the entities being studied broadly include dental caries, periodontal disease, child growth, etc.

Most of the recent growth of dental research in Canada has been in the area of the biology of the oral cavity. With disease prevention for a goal this is not surprising, since methods of preventing dental disease must surely be developed on a biological basis. Canadian research has lagged in the area of clinical studies. A notable exception is the Brantford-Stratford-Sarnia water fluoridation study, which ranks as one of the best in the world. Slowness in developing clinical investigations has been largely due to lack of personnel trained both as clinical teachers and research workers. This area should be speeded up, and until it is, the great reservoir of sound practical and useful information waiting to be revealed through studies of data available in our clinics is being wasted.

PERSONNEL

The number of people enrolled as members of the International Association for Dental Research is a rough index of the number of dental research personnel in the United States. Between 1920 and 1960 membership in this organization increased from 53 to approximately 920 — another reflection of the growth of dental research during that period.

In Canada, while no early figures are available, it can be safely assumed that in the year 1920 not more than one or two people were actually doing research in dentistry. By 1954 the C.D.A. survey of dental research indicated that 21 workers were so engaged in the dental schools, and that about half of these people possessed graduate training in addition to their dental degree. By 1959 the number of workers doing research was 24, of whom 21 had a graduate degree in addition to their dental degree. This doubling in the number of "career investigators" in the dental schools from 1954 to 1959 reflects a far greater increase in research activities than the modest increase in the total number of research workers indicates.

While these numbers are impressive, the fact still remains that most of these people are not being permitted to produce the amount of research of which they are capable, because they are not given the time

*Report to the Honourable Gordon Churchill, chairman of the Committee of the Privy Council on Scientific and Industrial Research by the Special Committee appointed to review extramural support of medical research by the Government of Canada, 1959.

to do it. This is a very serious problem both in Canada and in the United States. In the United States only 13 of 485 principal investigators devote all of their time to research, and 60 per cent spend less than half-time. The rest of their time is devoted to teaching and administrative assignments. Some workers, even with less than half-time available for research, have responsibility for as many as 18 research projects — a most unwholesome situation. The Survey Commission felt that in the interests of better research, workers should devote a minimum of 25 per cent of their time actually engaged to research.

In Canada accurate figures of time spent on research by individual investigators are not available. Returns from the 1959 C.D.A. survey indicated that a great variation exists — from less than 10 per cent to as much as 100 per cent of the researcher's time being given to research activity. It was evident, however, that there were more investigators devoting less than 15 per cent of their time to research than there were spending more than that. This lack of available time for research is a serious and frustrating problem for the research worker, which can be solved only by relieving him of other responsibilities by increasing the school staff so that the teaching and administrative load can be more widely distributed.

Good research quarters now exist in all of the Canadian dental schools, and the investigators are paid salaries commensurate with the university appointments they hold. The problem is not physical facilities, research salaries, or money for projects; it is lack of sufficient personnel trained to do research, and lack of time for research by those who are trained to do it.

FUTURE DEVELOPMENT OF DENTAL RESEARCH

Personnel. — If dental research is to grow, more capable people must be attracted into it. More young, highly qualified dental graduates must be encouraged to take up teaching and research careers. Because of the natural interests of the dentist and because of his knowledge and experience in handling the problems of dental disease, the dentist-research worker should be the leader in dental research.

However, dental training, or even dental specialist training alone will not suffice to make a man a research worker. To become properly qualified in research requires special training and experience which dental

training does not provide. It is as foolish to assume that dentists can do research without further training as to assume that the holder of a Ph.D. in biology can practise dentistry.

Desire for a research career does not occur through spontaneous combustion; a fire must be lit. This infers first, that someone is willing to make the effort to strike the match, and second, that the fuel is worth burning.

Striking the match is the responsibility of the whole profession, but particularly those on the staffs of dental schools. Of these, the research workers are the obvious ones to do most to encourage and direct undergraduates into a research career. But others must play their part as well, and research seminars integrated into the in-service training program of the schools should help make better research career counsellors of all.

The potential and performance of the fuel depends on the quality of dental recruits, what happens to them during their undergraduate education, what provision is made for them to obtain research training after graduation, and what assurance they have of obtaining a research and teaching appointment after they are trained. Significant steps have recently been taken in Canada in all four areas.

First, the recent intensive pursuit of recruitment efforts for all of the Canadian schools should result in an improvement in the academic qualifications of students entering dentistry. To attract the already scientifically inclined high school student to dentistry, the Canadian Dental Association has recently become one of the sponsors of Canadian Science Fairs Council. Past efforts in the United States to create an interest in dental problems for science fairs competitions have met with considerable success — success which should be reflected in Canada in the near future.

Second, a plan to provide dental students with experience in research laboratories was initiated by the Canadian Dental Association in order to interest undergraduate students in dental research. This was subsequently also adopted by the National Research Council. Funds have been provided to pay salaries to undergraduate students who have been chosen to work in research laboratories in the universities during the summer. In 1961 a total of twenty-six undergraduate dental students benefitted from this experience, of which eighteen were supported by the National Research Council and eight by the Canadian Dental Association. Funds allocat-

ed for this purpose were approximately \$24,000. Although this program has only been operating for a few years, it has already established its worth.

Next, to assist graduates in obtaining research training, both the Canadian Dental Association and the National Research Council have established fellowships. The C.D.A. funds for research support are almost entirely spent for either undergraduate student support or for graduate fellowships. The National Research Council funds are distributed as fellowships and grants-in-aid of research. Since the C.D.A. program was begun, three-quarters of those who have received support from this source are now on the staff of Canadian dental schools.

With few exceptions Canadian dental graduates seeking research training go outside the country to obtain it. This is largely due to the inadequacy of training facilities in Canadian dental schools. In the United States the need for research training centres in association with dental schools was recognized some years ago, and in 1957, the U. S. Congress made funds available through the National Institute of Dental Research to support such centres. No such institute exists in Canada at the present time.

Finally, to provide career opportunities after completion of graduate training, the National Research Council recently established an award called an associateship. When first established, this award provided the salary for an experienced research worker on the staff of a dental school as a full-time research worker. The salary is paid through the university by the Council and the appointment is, in effect, a permanent academic appointment. This year, the Council modified the terms of its associateships to include provision for interim support of the young research worker who has just completed his training, to spread his assimilation with the staff of the school over a period of time, and to provide him with a better opportunity to get his research program established. Ordinarily new appointments to a dental school are academic appointments and usually place heavy demands on the young instructor for teaching and other responsibilities, leaving him inadequate time for research. These N.R.C. awards will thus serve two valuable purposes: (a) the young investigator will be given a better opportunity to get his research started, and (b) the school administration will have a reasonable period of time in which to evaluate the prospective appointee before creating a regular staff appointment for him.

General. — There is no question that more dental research is needed in Canada. This is the only solution to problems of treatment, control, and prevention of dental disease. We need more people trained in research methods; we need more staff in the existing dental schools so that more time can be devoted to research; we need more schools in which to do research; we need to ensure space for laboratories in these new schools; we need to establish research training institutes for personnel in Canada; and we need more money to do all of these things. The planning, guidance and development of this program should emanate from some central agency associated with Canadian dentistry.

The American Survey Commission pointed out a need to establish a non-governmental agency in the United States to assist in the planning and guidance of their program of dental research expansion, and to solicit funds, particularly the special funds for research into problems peculiar to dentistry and dental teaching. In Canada such an agency already exists, and steps have been taken and plans are under way to enable the Canadian Dental Research Foundation to act in this capacity. Since the board of directors of the C.D.R.F. is the Council on Research of the Canadian Dental Association, it therefore enjoys a close liaison with the Association and the broader program of dental affairs in Canada.

To formalize this responsibility of the Canadian Dental Research Foundation, the Board of Governors of the Canadian Dental Association recently accepted the proposals of the Foundation to set up a central office at C.D.A. headquarters which will act in an advisory capacity to co-ordinate effort, avoid unnecessary duplication, and in general stimulate the development of further research in dentistry. The office will serve as a source of information for dental research workers who need financial or other assistance, as a source of information for government or other agencies concerning dental research, and as a liaison between the dental research worker and other biological research activities in Canada.

SUMMARY

In summary, herewith are listed the significant recommendations of the U. S. Survey, together with comments indicating their pertinence on the Canadian scene:

1. Recommendation

"That financial support for dental research be increased, not only from federal sources but also from individuals, philanthropy, and corporations. The increase in financial support should be commensurate with the increase in the availability of research personnel."¹

Comment — Federal funds available for support of dental research in Canada were doubled in 1961. Further effort is needed to raise funds from individuals, philanthropy, etc.

2. Recommendation

"That a non-governmental agency be established for the solicitation and distribution of grants from industry and philanthropy for the advancement of research in the cause and control of oral disease."²

Comment—In Canada action has already been taken to do this through the Canadian Dental Research Foundation.

3. Recommendation

"That the federal government, in its support of research and training in the fields of health, adopt the principle of payment to universities of the full overhead costs."³

Comment — Some effort has been made in Canada to do this through N.R.C. general grants to universities.

4. Recommendation

"That universities assume more responsibility for the development of close relations among their dental schools, other health science schools, and graduate departments in order to promote exchanges of knowledge and ideas."⁴

Comment — A number of dual appointments (i.e. to both the dental and medical staffs) have already been made in Canadian universities.

5. Recommendation

"That dental schools initiate or reinforce programs designed to stimulate faculty interest in research in order to improve the interest in scholarly pursuits."⁵

Comment — This needs further effort in this country as in the United States.

6. Recommendation

"That dental schools enlarge their faculties to provide more time for research for those who are competent to engage in it."⁶

Comment — Funds to assist in this endeavour have been provided through federal sources.

7. Recommendation

"That substantial federal funds be made available for the recruitment and training of competent scientists from dental and other fields of science to do research in dental schools."⁷

Comment — Funds have been available both through the federal government and the Canadian Dental Association for this purpose, for at least fifteen years.

8. Recommendation

"That dental schools develop and improve programs which are designed to interest dental students in research and teaching."⁸

Comment — Undergraduate summer assistance has done much to help in this regard.

9. Recommendation

"That financial support for fellowship and training programs be augmented."⁹

Comment — This should be done in Canada as well.

10. *Recommendation*

"That a form of fellowship be created between the postdoctoral and the senior fellowships for career development and that it be supported by federal funds."

Comment — This has already been established in Canada through the National Research Council.

11. *Recommendation*

"That research efforts be broadened to include more projects in the fields of the social sciences and education, and that the collaboration of the appropriate university departments be enlisted for such studies."¹¹

Comment — The problem in Canada is to obtain the personnel with training to do this sort of project. Other university departments have always co-operated fully with the dental investigator.

12. *Recommendation*

"That there be an expansion of facilities for the evaluation and standardization of pharmaceutical preparations used in the treatment of dental disease."¹²

Comment — The problems of setting up such a testing centre are great, although the project is worthy.

13. *Recommendation*

"That communication of research findings to dental teachers and to practitioners be accelerated and that federal and other assistance be provided for the dissemination of research information by the use of publications, seminars, and institutes."¹³

Comment — The first Canadian Conference on Dental Research, 1961, represents real progress in this respect.

REFERENCES

1. Survey of Dentistry, Final Report. Commission on the Survey of Dentistry in the United States. Washington, American Council on Education, 1961. p. 466.
2. Ibid. p. 466.
3. Ibid. p. 465.
4. Ibid. p. 468.
5. Ibid. p. 459.
6. Ibid. p. 454.
7. Ibid. p. 468.
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9. Ibid. p. 462.
10. Ibid. p. 461.
11. Ibid. p. 469.
12. Ibid. p. 438.
13. Ibid. p. 440.

Transactions of the Canadian Dental Association • The Association's *Transactions* contain reports of the activities of the various bureaux, councils and committees. Published in English and in French after every meeting of the Board of Governors, it is recommended reading for all Canadian dentists.

Fluoridation • Dentists have an obligation to convince their patients that fluoridation can reduce dental caries safely and inexpensively by about two-thirds.

C.D.A. Library • The Library of the Canadian Dental Association contains a very large selection of dental and medical books, periodicals and other publications available for circulation to members of the Association anywhere in Canada. Donations to the Library Trust Fund qualify for income tax deduction.

DENTISTRY IN THE NEWS

The Association

ANNUAL MEETING PLANS NEAR COMPLETION

Vancouver is getting ready to welcome dentists from across Canada for the 61st annual meeting of the Canadian Dental Association. The Board of Governors will meet May 30 to June 2, followed by the convention from June 3-6.

Under the general chairmanship of L. F. Marshall of Vancouver, the Convention Committee has made comprehensive plans for the enlightenment and entertainment of visiting dentists. Featured essayist will be J. A. Anderson of Chicago, Illinois, who will present a philosophy of dentistry that incorporates time and motion studies as related to efficiency in dental practice. Included will be organization of office routine, better utilization of auxiliary personnel and more efficient design and layout of office equipment. H. W. Fleege of the University of Washington will deliver a lecture on "The Selection, Arrangement and Dismissal of Auxiliary Personnel" and will also give a television presentation on "Case Presentation in Dentistry for Children". K. R. Cantwell, of the University of Oregon will review the latest developments in dental equipment and high-speed cutting instruments. The lectures

by Russell Haney of Sherman Oaks, California, will deal with communication between the dentist and those with whom he comes in contact.

The Honourable W. A. C. Bennett, premier of British Columbia, will be the luncheon speaker on the opening day of the convention. There will also be an extensive display of table clinics, scientific and commercial exhibits.

A dance cruise on Howe Sound aboard a Canadian Pacific "Princess" ship, class reunions, fraternity dinners and the president's ball are included in convention social events. A special program has also been planned for the ladies.

A choice of several tours, including a visit to Hawaii, a "Round-the-World" tour to include the Cologne F.D.I. international congress, and a boat trip to Alaska returning by air, are included among the post-convention attractions. Both the Hawaii and Alaska tours include a visit to the "Century 21 Exposition" in Seattle.

Reduced rail fare certificates are available at Canadian Dental Association headquarters.

COUNCIL ON EDUCATION MEETS

The Council on Education met at Association headquarters, March 15-16. In attendance were T. J. Cook of Winnipeg, C. E. Dexter



Vancouver's ultramodern Queen Elizabeth Theatre, site of the 1962 national convention of the Canadian Dental Association, June 3-6.

of Halifax, H. R. McLean of Edmonton, J. McCutcheon of Montreal, H. J. Reid of Toronto and J. P. Lussier of Montreal, chairman. Other participants included R. G. Ellis of Toronto, J. D. McLean of Halifax, J. W. Neilson of Winnipeg, A. C. Lewis, educational consultant to the Council, Colonel G. B. Shillington of the Royal Canadian Dental Corps, B. F. Miller of the American Dental Association's Council on Dental Education, Don W. Gullett, Association secretary, Miss B. I. Boyd, director of the Bureau of Economic Research, and other headquarters staff members.

The Council gave detailed consideration to the Dental Students' Register (1962) and to a report on the costs of becoming a dentist. Both reports were presented by the director of Economic Research, W. J. Dunn, chairman of the National Recruitment Committee (a sub-committee of the Council on Education) also presented a report. Dr. Dunn was re-appointed chairman for the ensuing year. C. H. M. Williams, the Association's representative to the National Cancer Institute of Canada, presented a report which resulted in instruction from the Council to undertake further exploration of possible assistance from the National Cancer Institute of Canada to Canadian dental schools.

A. C. Lewis, chairman of a sub-committee to establish minimum requirements for schools of dental hygiene, submitted a report which was adopted by the Council with certain amendments. This report will be published in a forthcoming issue of the *Journal of the Canadian Dental Association*. Dr. Lewis also presented a report on the survey of Canadian dental schools during 1961-62.

Other reports presented included the following: dental auxiliary training by H. R. McLean; National Dental Examining Board of Canada by J. D. McLean; aptitude testing in Canadian dental schools by R. M. Grainger; proposed Canadian fund for dental education by R. G. Ellis; dental internships by J. McCutcheon; National Conference of Canadian Universities and Colleges by J. P. Lussier; Canadian Conference on Education by J. W. Neilson; and Royal Commission on Health Services by Don W. Gullett.

The Council recommended the establishment of a Canadian fund for dental education under a trust deed administered by the Canadian Dental Association. The Council also recommended that corporate members continue their support of the National Dental Examining Board of Canada and that dental schools continue to encourage their students to take the National Dental Examining Board examinations. A. Fortier was re-appointed as representative to the National Dental Examining Board of Canada for a further term.

The problem of assessment of graduates of foreign dental schools, by Canadian schools, for provincial licensing boards was discussed. At present Canadian dental schools examine such individuals and then admit them to advanced standing when space permits. In some areas a compromise plan is being studied whereby the dental school will provide a non-degree refresher course in preparation for licensing examinations by the provincial board. The Council was of the opinion that the same standard should apply to all licensees.

The Council will undertake a survey of Canadian schools of dental hygiene during 1962-63. H. W. Reid and A. C. Lewis were appointed to a survey team, for this purpose, with power to add one other member.

Immediately prior to the meeting of the Council and under its sponsorship, teachers representing every Canadian dental school attended a teacher-training conference on Oral Diagnosis. This conference is one of a series of annual conferences arranged to permit face-to-face discussion of problems confronted by teachers of particular subjects. Attending the conference were D. J. MacGregor of the University of Alberta, J. D. Spouge of the University of Manitoba, J. A. Pedler of the University of Toronto, Jean Fontaine of the Université de Montréal, and A. G. Racey and L. E. Francis of McGill University. R. H. Bingham of Dalhousie University was conference chairman.

The subject of the 1963 teacher-training conference, sponsored by the Council, will be "Orthodontics". R. D. Haryett of the University of Alberta was appointed chairman of the 1963 conference.

Because of increasing interest in hospital dental services and because the possibility of dentists admitting patients to hospitals is gaining favour in some quarters, the Council instructed its chairman to appoint a sub-committee of three dental school deans to study the feasibility of training dental students in the physical examination of patients.

ORAL SURGEONS TO MEET IN VANCOUVER

The Canadian Society of Oral Surgeons, a section of the Canadian Dental Association, will hold its annual scientific meeting at Vancouver, June 4-6, in conjunction with the Canadian Dental Association Convention. Subjects, essayists and locations of the various sessions are as follows:

"The Oral Surgeon's Role in Temporomandibular Joint Problems", R. E. Johnson, Queen Elizabeth Theatre, June 4, 9.30 A.M.
"Surgical Procedures of Aid to the Pros-

thodontist", P. T. Smylski, Hotel Vancouver, June 4, 3.00 P.M.

Business meeting of the Canadian Society of Oral Surgeons, Queen Elizabeth Theatre, June 5, 9.00 A.M.

"Surgical Pathology", R. E. Johnson, Queen Elizabeth Theatre, June 5, 10.00 A.M.

"The Modern Concept of Blood Clotting", J. Sturdy, Queen Elizabeth Theatre, June 5, 2.00 P.M.

Panel discussion, "Pain in Dentistry", G. M. Ling, E. Webb, F. A. Reid and R. Haney, Hotel Vancouver, June 5, 3.30 P.M.

CHILDREN'S DENTISTRY SECTION FORMS NEW UNITS IN WESTERN CANADA

Two new units of the Canadian Society of Dentistry for Children are being formed in British Columbia and Saskatchewan. The Society serves as paedodontic section of the Canadian Dental Association.

Originating in Ontario some years ago, the Canadian Society of Dentistry for Children has had a western unit in Alberta for more than a year. The two new units will give the Society a total of four provincial units. The British Columbia unit is expected to hold an organizational meeting at the time of the Canadian Dental Association's convention at Vancouver this June.

NEW NEIGHBOUR FOR C.D.A. HEADQUARTERS

Canadian Dental Association headquarters welcomes a new neighbour, the Ontario Medical Association. Already located two doors north, the medical group has purchased the property adjoining C.D.A. headquarters. The combined properties have a frontage of 145 feet and a depth of 195 feet and will allow for future expansion of the medical headquarters.

The property had been offered to the Canadian Dental Association but expansion plans of the Association do not envisage a need for additional property. Construction of the addition to the C.D.A. building is expected to begin in the spring.

EDUCATION POSTAGE STAMP ISSUED

A special commemorative issue postage stamp honouring education was issued by the Post Office Department on February 28.

The special stamp honoured Education year in Canada and particularly the Canadian Conference on Education held in Montreal early in March. The Canadian Dental Association was represented at the conference by J. P. Lussier, associate dean of the Faculty of Dental Surgery, Université de Montréal, also chairman of the C.D.A. Council on Education, and by J. W. Neilson, dean of University of Manitoba's Faculty of Dentistry.

Canada and the Provinces

NEW DENTAL MECHANIC LEGISLATION IN BRITISH COLUMBIA

Legislation making it legal for dental mechanics to deal directly with the public received third reading in the British Columbia legislature at the end of March. The new Bill 27 represents a revision and expansion of the previous Dental Technicians Act and makes provision generally for the registration, licensing, and qualification of persons to be known as dental laboratory technicians and other persons to be known as dental mechanics. The new bill, known as "An Act to Amend the Dental Technicians Act", was brought in following an earlier court ruling that similar provisions by the Dental Technicians Board were ultra vires (J. Canad. D.A. 27:325, May 1961). This bill was brought in as a provincial government measure despite the efforts of the College of Dental Surgeons of British Columbia which suggested alternative legislation as far back as the summer of 1961.

Under the new act a person seeking full dentures will be able to go directly to a dental mechanic for impressions and fitting. But he will have to visit a dentist or a physician first to obtain a certificate of oral health which states that "the oral cavity and the associated structures and tissues thereof are in a proper condition for the insertion of full dentures and that no teeth have been extracted from and no surgical treatment has been performed within the oral cavity within twenty-one days preceding the date of inspection".

Dental mechanics and dental laboratory technicians will operate under the jurisdiction of the Dental Technicians Board which

will make the necessary regulations with regard to registration, licensing, educational qualifications, and examination of the two groups and their respective apprentices. The Board may license a person who has been registered as a dental mechanic to "make, repair, reline, replace, or furnish upper and lower full dentures, or both, and carry out the necessary non-surgical intra-oral procedures, including the taking of impressions necessary therefor, without a prescription" if he has received a certificate of oral health from a dentist or duly qualified physician within seven days of the date of inspection of the oral cavity by such dentist or physician. The act prohibits anyone from being registered both as a dental laboratory technician and a dental mechanic. Stringent penalties are provided in cases of contravention of the act. Moreover, it is deemed "sufficient proof of a breach of the act or regulations if it is proved that the accused has committed on one occasion anything prohibited" by the act or regulations.

The act comes into force on a date to be fixed by the "Lieutenant-Governor by his Proclamation", probably after the Dental Technicians Board sets up new regulations.

At the same sittings of the legislature third reading was also given to Bill 67, "An Act to Amend the Dentistry Act". This bill increases the Council of the College of Dental Surgeons of British Columbia to eleven members, ten to be elected by the profession and one to be appointed annually by the Lieutenant-Governor-in-Council. Certain additional revisions are also made with respect to registration and licensure.

ALBERTA

Edmonton and District Dental Society. — The February meeting of the Edmonton and District Dental Society was devoted to a discussion of the advantages and disadvantages of prepaid dental care. R. L. Rasmussen of Calgary, guest speaker, informed the members of the activities of the Calgary and District Dental Society with respect to prepaid dental care. The speaker stressed the importance of a pilot plan which must precede the initiation of a fully developed prepaid dental care plan.

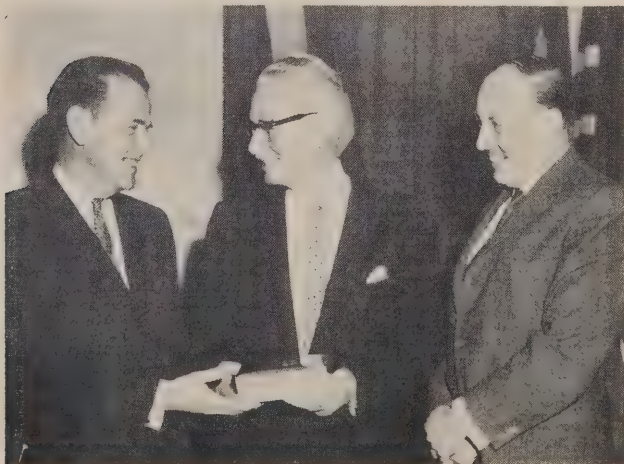
Canadian Dental Association president William Miller and secretary Don W. Gullett addressed the society at the March meeting.

BRITISH COLUMBIA

Prepaid Dental Care Plan Urged. — A prepaid dental care plan for British Columbia was urged by the province's dentists at the hearings of the Royal Commission on Health Services in Vancouver on February 20.

According to the *Vancouver Province* the 62-page joint brief of the College of Dental Surgeons of British Columbia and the British Columbia Dental Association stressed the urgent need for the newly announced dental school at the University of British Columbia, need for stricter regulation of dental technicians and federal support for fluoridation.

Jennings



Presentation made at a recent meeting of the Vancouver and District Dental Society. From left to right: W. P. Munsie, president of the College of Dental Surgeons of British Columbia; G. F. Amyot, M.D., retiring provincial deputy minister of health; and Frank McCombie, director of the provincial health department's Division of Preventive Dentistry.

Vancouver and District Dental Society. — President William Miller and secretary Don W. Gullett of the Canadian Dental Association addressed the society on March 6, when they visited Vancouver in the course of the president's western tour. Dr. Miller stated that problems facing the Canadian dental profession are brought about by outside pressures. In the opinion of the public there is a tendency toward socialized dentistry and the profession must face the problem squarely, the president added. In the course of a brief review of the history of dentistry, Dr. Miller described the founding of the Canadian Dental Association in 1902. Since that time there has been a growing public concern with oral health and the socio-economic aspects of dental care. Consequently an adequate supply of trained personnel, efficiency in the administration of services by the profession and the maintenance of a high standard of care are necessary.

Describing the hearings of the Royal Commission on Health Services which he has attended in various parts of Canada, Dr. Gullett stated that one of the main issues has been the matter of financing health care. "The provincial governments vary in what they are willing to pay, but in the last analysis the taxpayers will have to bear the cost," Dr. Gullett stated. So far only Saskatchewan has demanded a compulsory health insurance scheme. All the other provincial governments, except the government of British Columbia which presented no brief, have indicated their opposition to a compulsory scheme. Other problems cited by Dr. Gullett were the difficulty of operating health services on a fixed budget and the matter of priorities or where to begin a health plan.

Vancouver Dental Offices Radiation-Free. — The director of Dental Services for the Metropolitan Health Committee, D. J. Yeo recently announced the results of a careful check of dental offices to detect "stray" radiation given off by X-ray equipment. The stray radiation is negligible — small enough to be of no consequence in influencing the health of either patients, dentists or dental assistants.

The survey was conducted with special radiation monitoring films supplied by the federal Department of National Health and Welfare. Radiation-sensitive film was placed in 204 dental offices in Metropolitan Vancouver and small film packs were attached to the lapels of dentists and their assistants and to dental chairs. The film was left for two weeks and the results showed that the radiation was minute.

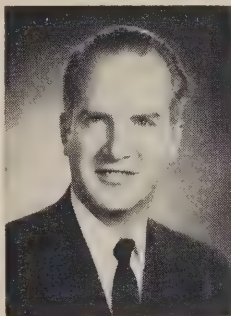
Precautions which dentists take to reduce the amount of radiation given off by X-ray equipment include the use of super-speed film, a lead diaphragm to collimate the X-ray beam and an aluminum filter to reduce the skin and marrow dose by 50 per cent.

NOVA SCOTIA

Halifax County Dental Society. — A. E. Hoffman, associate professor of Oral Surgery, Dalhousie University, addressed the society on February 28. The meeting was held at the Nova Scotian Hotel in Halifax.

Discussing "Dental Aspects of Oral Malgiances", Dr. Hoffman stressed the dentist's responsibility in the diagnosis of these lesions. He stressed the importance of palpating soft and hard tissues in the area of the mouth and neck, as well as careful visual inspection. Good radiographs and biopsies are necessary for diagnostic confirmation, Dr. Hoffman added.

"Dentists should endeavour to remove all traumatic factors such as carious teeth, ill fitting dentures, etc. which act as predisposing causes", Dr. Hoffman stated.



J. H. Mullett, president, Academy of Dentistry, Toronto.

Toll

ONTARIO

Academy of Dentistry, Toronto. — The Third and last Stated Meeting of the Academy of Dentistry, Toronto was held on March 22 at the Faculty of Dentistry, University of Toronto. The clinician, C. H. M. Williams, professor and head, Department of Periodontics, University of Toronto, addressed the meeting on "Practical Demonstrations and Treatment Procedures Used in Periodontal Therapy". The highlight of the presentation was the demonstration of several common thera-



Shown receiving awards at the international convention of the Alpha Omega Dental Fraternity in Montreal, December 1961, are the two marshals of the convention, H. Lank, left, and M. Lang, right, of Montreal. National president F. Stein of Detroit, centre, presented the awards.

peutic procedures employed in periodontal treatment. These were shown by means of closed circuit television.

At this meeting the new council of the Academy of Dentistry for 1962-63 was inducted into office. The new president is J. H. Mullett. The other officers are A. E. Histrop, past president; R. M. Grainger, president-elect; J. E. Carson McGowan, secretary; and Murray Cornish, treasurer. Elected as councillors were G. M. Marshall and B. J. Levin of North Toronto, J. R. Glenney and A. G. Brown of West Toronto, M. G. Hardy of East Toronto, and T. R. Fisher and G. C. Stirling of Central Toronto.

QUEBEC

College of Dental Surgeons of the Province of Quebec. — The following matters received attention at a meeting of the board of governors of the College held on January 26:

Approval of regulations concerning the rights, duties and course of study for dental hygienists. — Although it is hoped to establish courses of training in dental hygiene in the near future within the province, licensed dentists may forthwith engage dental hygienists holding a diploma from another province or from the United States. In this case certain formalities must be complied with to effect registration in the province of Quebec.

Modification of examinations for dental students. — Commencing in 1964, theoretical examinations at the two dental schools during the four undergraduate years are to be re-

placed by the National Dental Examining Board of Canada's examination which must be taken. In addition, the final year practical examinations will in future comprise three tests; silicate, amalgam and inlay restorations. The students' records will also be examined with respect to performance in all clinical fields.

Joint committee of the College and of the Association of Dental Technicians of the Province of Quebec. — Recommendations were received proposing the acceptance of voluntary regulation by dental laboratories, accreditation of such laboratories, improvement of the professional competence of dental technicians by means of advanced courses, a 16 per cent increase in the fees of accredited laboratories, and co-operation between the College and the dental technicians' association in the control of illegal practice.

Montreal Alumni Chapter, Alpha Omega Fraternity. — For the first time in its history the Alpha Omega Dental Fraternity held its international convention in Montreal. The meeting, which took place during the last week of December 1961 at the Queen Elizabeth Hotel, was attended by approximately five-hundred delegates and their families from all parts of the North American continent and overseas. The program embraced scientific sessions and business meetings as well as social events.

Guest clinicians included Herbert Schilder, who lectured on endodontics, and Sidney Sorrin, who lectured on periodontics. Also presented at the convention was a report concerning progress of the drive to build the Hebrew University School of Dentistry in

Israel. Approximately \$1 million of the required \$1.5 million for this project has now been raised. The founding, establishment and maintenance of this dental school has been a major project of the Alpha Omega Dental Fraternity.

Officers elected at the convention include Fred Stein of Detroit, immediate past president; Walter Levine of Baltimore, national president; Gilbert Robin of Pittsburgh, national president-elect; John Samuels of Cleveland, national secretary; Marvin Goldstein of Atlanta, national editor; and Herbert Caplan of Montreal, national treasurer.

Acting as convention marshals from the host city were H. H. Lank, M. Lang and Mrs. R. Leith.

Montreal Dental Club. — The second joint meeting of the three Montreal dental societies was held at the Queen Elizabeth Hotel on March 19, 1962. The guest speaker was S. D. Tylman of the Department of Fixed Partial Dentures, University of Illinois College of Dentistry. The presidents of the three sponsoring societies, C. Vachon of the Société Dentaire de Montréal, C. G. Baer of the Mount Royal Dental Society, and F. O. Frederick of the Montreal Dental Club presided at the afternoon, dinner, and evening sessions respectively.

Dr. Tylman discussed the theory underlying the hinge axis and its uses in full-mouth rehabilitation. By means of motion pictures and slides he described the technique of obtaining accurate registrations — the extraoral tracing to locate the hinge axis and the intraoral technique of recording the condylar readings by means of clutches. The many uses of a bite plane constructed with arrowhead clasps were also described by Dr. Tylman. These include restoration of vertical dimension by allowing the teeth to erupt, correction of temporo-mandibular joint disturbances, and as an aid in recording centric occlusion. Dr. Tylman concluded his presentation with a very fine table clinic showing cavity preparations, individual retainers, and stresses placed on bridges.

Mount Royal Dental Society. — The fourth general meeting of the Mount Royal Dental Society took the form of an all-day clinic held at the Queen Elizabeth Hotel on January 12, 1962. The lecturer was S. A. MacGregor, professor and head, Department of Paedodontics, University of Toronto, and chief of Dental Services, The Hospital for Sick Children, Toronto.

Dr. MacGregor's subject for the morning session was "Child and Practice Management". In his discussion, Dr. MacGregor pointed out that a complete segment of the population can only be neglected for a certain length of time and then a tremendous demand is built up. This is so with dentistry for children. There is now a tremendous need for more and better dental care for these young patients, the speaker stated.

Dr. MacGregor's topic for the evening was "Diagnosis and Treatment Planning". Stressing the importance of obtaining a complete medical history and noting the purpose of the patient's last visit to the physician, Dr. MacGregor illustrated various areas of diagnosis and treatment by means of slides. Included among these were examples of ectodermal dysplasia, opalescent dentine, the effect of pre-natal environment on arch and tooth position, fluorosis, and interceptive orthodontics.

The fifth meeting of the Mount Royal Dental Society was held at the Mount Royal Hotel on February 13, 1962. L. E. Francis of the Faculty of Dentistry, McGill University addressed the meeting on "Dental Therapeutics and Experimental Pharmacology". Discussing antibiotic therapy, the speaker labeled oral penicillin as the antibiotic and route of administration of choice since it shows a much lower incidence of anaphylactic reactions when compared to the parenteral type. The speaker also drew attention to side reactions such as nausea, vomiting, diarrhoea, and other chronic conditions associated with prolonged administration of antibiotics such as chloramphenicol and streptomycin.

Dr. Francis described the treatment of aphthous ulcer with a solution of 6 per cent quinine bisulphate. This tends to produce a remission of symptoms unlike other forms of treatment which only give symptomatic relief. Referring to experimental investigations being carried out in his department at McGill University, Dr. Francis stated that repeated injections of aspirated fluid from aphthous lesions into chick chorion-allantoic membrane produced an unusual fusiform organism which could not be grown extracellularly. Dr. Francis also described investigations concerning the effect of diphenylhydantoin on the histamine content of hyperplastic gingival tissue.

Montreal Section, American Academy of Dental Medicine. — Essayists who addressed the Montreal Section of the American Academy

of Dental Medicine during the current year include W. B. Donohue of Montreal whose topic was "The Effects of Radiation on the Growth of the Skull in the Experimental Rat", Abraham Goldstein of Brooklyn, New York who delivered a treatise on Oral Diagnosis and A. A. Antoni of the Faculty of Dentistry, University of Toronto who discussed "The Role of Dentistry Among Other Hospital Services".

The final meeting of the current season was held in April when the following new officers were installed for 1962-63: M. Robichaud, honorary president; R. F. Harvey, president; Herbert Caplan, vice-president; and Claude Baril, secretary-treasurer.

Quebec Society of Orthodontists. — The final meeting of the current season was held on March 27, 1962. President J. L. Bertrand presided. The lecturer was Donald Kepron of Montreal who discussed "Concepts of Occlusion".

SASKATCHEWAN

Moose Jaw Dental Society. — A two-part demonstration of the efficient use of auxiliary dental personnel, commenced at the February meeting, was concluded at the March meeting with a presentation of tape recordings and slides illustrating the role of the dental assistant. The program, based on a demonstration by the U. S. Department of Health, Education and Welfare and the Tennessee State Department of Health currently in progress at Knoxville, Tennessee, was presented by A. F. Muirhead of Moose Jaw, a recent participant in the Knoxville demonstration.

Elected as officers for the year 1962 were A. F. Muirhead, president; A. Duff Leask, vice-president; and C. W. Wellington, secretary-treasurer.

Saskatoon Dental Society. — A Saskatoon orthodontist, J. J. Schachter addressed the March meeting of the Saskatoon Dental Society. Dr. Schachter demonstrated a new space maintainer which he has developed. F. S. W. Green of North Battleford was a visitor to the meeting. The society decided to sponsor a dinner on August 29 at the Waskesiu meeting of the Saskatchewan College of Dental Surgeons.

International Items

FRANCE

Dental Congress Scheduled for October. — France's leading annual dental meeting, *Les XXXVIes Journées Dentaires Internationales de Paris*, has been scheduled for November 19-25, 1962 according to an announcement by G. Delbart, the organization's secretary general. Scientific sessions, to be held at the Maison de la Chimie, 28bis rue Saint-Dominique in Paris, will be conducted using simultaneous translation for the benefit of foreign visitors. An extensive display of table clinics and commercial exhibits will also be presented. Further information may be obtained from M. Georges Delbart, Secrétaire Général, 7 rue Pierre Haret, Paris 9e, France.

GREECE

Periodontists Plan International Meeting. — Periodontists from all parts of the world are expected to attend next year's XVIIIth International ARPA Congress (International Association for Periodontal Research) to be held in Athens, April 15-20, 1963. Acting as host organization will be the Hellenic ARPA. The congress will be under the distinguished patronage of H.M. King Paul of the Hellenes. E. Phocas, rector of the University of Athens and professor in the university's Faculty of Medicine will act as congress president. Professor A. J. Held of Geneva, Switzerland is president of the International ARPA. An invitation to attend the congress has been extended to members of the Canadian Dental Association. Further information may be obtained from Professor O. A. Louridis, 8 Hippocratous Street, Athens, Greece.

SWEDEN

Reconsider Fluoridation Stand. — Sweden's only water fluoridation experiment, which was halted by court order, is expected to be resumed, according to a March 4 story in *The New York Times*. The government is considering sending to Parliament a bill that would accomplish this purpose.

Observing a student taking a plaster impression for a bridge at the dental school in Lvov, Ukrainian S.S.R., is a Canadian visitor, M. Strokon of Windsor, Ontario. At the extreme left is the director of the dental school. Dr. Strokon appears fourth from the left.



In 1952, the experiment began in Norrköping, a city of more than 91,000 situated about 80 miles southwest of Stockholm. An organization "of vegetarians and other health enthusiasts," the Health Furtherers, appealed to the Royal Medical Board to stop the study. When rebuffed, it carried the case to the Supreme Administrative Court in Stockholm and won in a ruling handed down December 7, 1961.

According to government officials, the court ruled against fluoridation partly because there was no specific law allowing it. The action being presently contemplated by the Swedish government comes in response to pleas from Norrköping to be permitted to recommence its study and let it run for about five years.

U.S.S.R.

In the course of a recent visit to the Soviet Union, a Canadian dentist, M. Strokon of Windsor, Ontario visited the dental school in Lvov, Ukrainian S.S.R., where the accompanying photograph was taken. Escorted by the school's director, Dr. Strokon visited the various departments of the dental school. He observed that much of the dental equipment used had been manufactured in Czechoslovakia and imported by the Soviet Union.

UNITED KINGDOM

UNITED STATES

Oral Surgery Award Offered.—The American Society of Oral Surgeons has announced the offer of a cash award at the Forty-Fourth Annual Meeting in New Orleans, October 24-27, 1962. This award will be for superior manuscripts concerning any phase of research related to oral surgery during the current year. All individuals interested in this competitive award should write to the American Society of Oral Surgeons, 840 North Lake Shore Drive, Chicago 11, Illinois, U.S.A.

Dental Auxiliaries.—The first group of dental auxiliaries, women aged between seventeen and twenty-five who will work with children in the local authority dental services, will have completed their training by the end of next summer. Their two-year course is being organized by the General Dental Council for an experimental period of five years.

The work of the dental auxiliaries will be similar to that of dental hygienists, but will be confined to children. It will be under the direct supervision of public dental officers, and will include carrying out simple fillings and extracting deciduous teeth.

Dental Hygiene Certificate.—The responsibilities of examining and awarding a certificate of proficiency in dental hygiene has been transferred from the Ministry of Health to the General Dental Council. The first examination was held in February.

The central examining board for this certificate consists of two representatives of the General Dental Council, one from the Health Services, one each from the (British) Royal Army Dental Corps and the dental branch of the Royal Air Force, two from the Association of Dental Hospitals of Great Britain, one from the British Dental Hygienists' Association and one from the Ancillary Dental Workers' Committee.

New Dental Hygienist Course. — A new dental hygienist training school was opened in London on January 3 under the auspices of the Royal Dental Hospital of London, University of London. A nine-month course will be held admitting twenty students per annum, with a bi-annual entry of ten students each October and April.

Preclinical subjects covered are anatomy, histology, physiology, bacteriology and pathology. Clinical subjects are operative techniques, oral hygiene, preventive dentistry, oral pathology, children's dentistry, dental radiography and clinical dental practice. Also included are dental health education, care of patients, first aid, clinical organization, care of equipment and legal and ethical obligations.

New Dental Hygienists' Journal.—The first issue of a new quarterly journal, *Dental Health*, sponsored by the British Dental Hygienists' Association, appeared in January. The aim of the journal is to cover all aspects of prophylaxis in dental health education. It will include papers related to periodontal conditions and public health.

Canadian Dental Schools

UNIVERSITY OF ALBERTA

Brief Submitted to Royal Commission on Health Services. — According to the *Edmonton Journal*, Alberta's dental school, in a

brief submitted to the Royal Commission on Health Services on February 13, said that immediate attention should be given to the problem of providing sufficient dentists to meet the increasing demand for treatment and preventive services.

The brief called for the establishment of dental faculties at the Universities of British Columbia and Saskatchewan, expansion of dental auxiliaries' services, the establishment of a training school for dental laboratory technicians in western Canada (supported by federal and provincial grants), and the establishment of a National Institute of Dental Research.

Also stressed were the need for increased federal and provincial scholarship and student aid schemes, post-doctoral fellowships to encourage dental graduates to take up careers in dental research and teaching, greater financial support of governmental and private sources for dental research, and more fluoridation programs as well as increased public health education.

H. R. MacLean, dean of the Faculty of Dentistry, stated that Alberta's 423 practising dentists will have to be increased to 766 within the next ten years to meet requirements in 1971. Optimum use of existing training facilities for the same period will result in the graduation of about 362 dentists, he added.

UNIVERSITY OF TORONTO

National Research Council Grants. — Grants totalling \$35,850 have been awarded to the following staff members for 1962-63:

D. L. Anderson, \$3,000 for histochemical investigation of cell cytoplasm and intercellular interfibrillar material;

J. G. Dale, \$3,800 for a study of bone resorption by implantation methods;

R. M. Grainger, \$7,000 for a statistical consultation and analysis unit;

A. M. Hunt, \$6,500, for the measurement of Strontium⁹⁰ and Carbon¹⁴ in primary teeth of Canadian children;

G. Nikiforuk, \$5,000, for investigation of organic compounds of dental tissues; and \$2,550 for photographic equipment; and

K. J. Paynter, \$8,000, for a study of factors influencing tooth morphology and caries susceptibility.

Student Recruitment. — S. A. MacGregor and G. T. Mitton attended meetings at Owen Sound, Goderich and Stratford, Ontario, on April 2, 3 and 4 in connection with student recruitment. The meetings were sponsored by the Grey-Bruce-Dufferin Dental Society, the

Wingham and District Dental Society and the Stratford Dental Society. Dr. MacGregor addressed prospective dental students who were guests of the respective societies. Later the same evening he addressed home and school association meetings.

About forty high school students from these areas of western Ontario visited the dental faculty on April 26. They were guests of the Dental Public Health Committee of the Ontario Dental Association at a dinner at Hart House, and overnight guests of Toronto dentists. They returned the following day by chartered bus to their homes.

Staff Notes. — Staff members who recently attended various meetings and conferences include the following:

R. M. Grainger, who lectured to graduate students at the Faculty of Dental Surgery, Université de Montréal, on "Statistics in Dental Research", April 5-6; and who also discussed aptitude testing programs in dental schools;

R. M. Grainger, who attended a meeting of the dental studies section of the United States Public Health Service, April 25-27;

H. A. Hunter, who attended the annual meeting of the American Academy of Oral Pathology at Indianapolis, Indiana, April 4-7;

J. Armitage and A. Brown, who attended a short refresher course in oral surgery at Northwestern University, Chicago, March 26-31; and

A. A. Antoni, who addressed the annual meeting of the Montreal section, American Academy of Dental Medicine, March 26.

ment of an individual who had been trained to perform certain technical dental procedures now done by dental officers.

The findings of this short study indicate that dental productivity significantly increased, a high standard of dental care was maintained and patient acceptance was excellent. It is considered that this type of clinical assistant would be a valuable addition to the dental team and in this regard further studies will be undertaken.

The study staff included Colonel G. B. Shillington and Major D. H. Protheroe of the Directorate Staff as well as Major P. S. Sills and Captain C. G. Travis, R.C.A.F. Station Uplands.

COLONEL SHILLINGTON ATTENDS MEETING

Colonel G. B. Shillington, Deputy Director General of Dental Services attended a meeting of the Canadian Dental Association's Council on Education held in Toronto on March 15 and 16.

MAJOR BRUSSO ON CROSS-COUNTRY TOUR

Major A. W. Brusso, the senior procurement officer at the Directorate of Dental Services, recently completed an inspection tour of company quartermaster stores and dental clinics in Eastern, Quebec and Western Commands.

Royal Canadian Dental Corps

STUDY ON EXPANDED EMPLOYMENT OF AUXILIARY DENTAL PERSONNEL

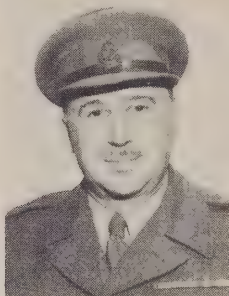
The Royal Canadian Dental Corps conducted a three-week study on the employment of auxiliary dental personnel at the Dental Clinic, R.C.A.F. Station Uplands recently. Its purpose was to determine the practicality of and to test methods for the clinical employ-

THE R.C.D.C. MILITIA

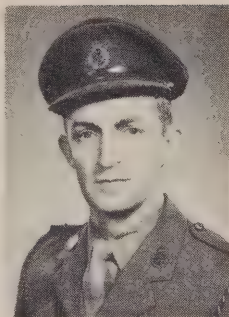
When the Royal Canadian Dental Corps Militia was authorized in October 1946 it consisted of eight dental companies organized on the pattern of the wartime field dental companies, each with a headquarters, a stores section, a laboratory section and twenty detachments with a total strength of 28 officers and 93 men. Headquarters of these companies were located in Halifax, Quebec City, Montreal, Ottawa, Toronto, London, Winnipeg and Vancouver.

This organization was changed in 1954 to the present twelve dental units and a Dental Advisory Staff. Each Militia dental unit has

Lieutenant-Colonel
J. E. Hallett



Lieutenant-Colonel
H. F. Bonnell



an establishment of 23 officers and 84 men. The Dental Advisory Staff is comprised of an Assistant Director of Dental Services (A.D.D.S.) in the rank of colonel with each Army Command and a Deputy Assistant Director of Dental Services (D.A.D.D.S.) in the rank of lieutenant-colonel at each Area Headquarters.

The present role of the R.C.D.C. Militia is primarily concerned with training for national survival and in this regard dental officers and other ranks attend the R.C.D.C. School for courses in mass casualty care,

Units located across Canada and commanding dental officers are as follows:

- No. 50 Dental Unit, Halifax —
Lt.-Col. J. E. Hallett
- No. 51 Dental Unit, Saint John —
Lt.-Col. H. F. Bonnell
- No. 52 Dental Unit — (Dormant)
- No. 53 Dental Unit, Montreal —
Major S. J. Gouroff
- No. 54 Dental Unit, Ottawa —
Lt.-Col. H. J. Chartrand
- No. 55 Dental Unit, London —
Lt.-Col. A. J. Harris
- No. 56 Dental Unit, Toronto —
Lt.-Col. A. Z. Henry
- No. 57 Dental Unit, Winnipeg —
Lt.-Col. M. J. Snidal
- No. 58 Dental Unit, Saskatoon —
Lt.-Col. A. Mintz
- No. 59 Dental Unit, Calgary —
Lt.-Col. G. N. Findlay
- No. 60 Dental Unit, Edmonton —
Lt.-Col. S. G. Geldart
- No. 61 Dental Unit, Vancouver —
Lt.-Col. P. L. Rondeau

Photographs of these commanding officers appear in this and in forthcoming issues of the *Journal of the Canadian Dental Association*. Lt.-Col. J. E. Hallett of Halifax and Lt.-Col. H. F. Bonnell of Saint John are pictured in this issue. Lt.-Col. Hallett's unit has been awarded the Moore Trophy as winner of the Militia General Efficiency Competition five times in the last eight years. Lt.-Col. Bonnell's unit has twice won the Saskatchewan Dental Association Memorial Trophy in the same competition.

Public Health

ALBERTA PUBLIC HEALTH DENTISTS MEET

H. R. MacLean, dean of the Faculty of Dentistry, University of Alberta, and J. E. Young of the Alberta Dental Association addressed members of the dental officers' section at the annual meeting of the Alberta division, Canadian Public Health Association. The meeting was held at the Banff School of Fine Arts, April 25-27. Dr. MacLean's subject was "The Dental Auxiliary Program" as conducted at the Faculty of Dentistry of the University of Alberta. Dr. Young's subject was "Dentistry in Alberta Today".

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

THE RADIOGRAPH IN PERIODONTOLOGY

To the Editor:

The article "The Radiograph in Periodontology" by Dr. J. R. Trott (J. Canad. D. A. 27:775, December 1961) requires some comment for its contains a most disquieting proposal. While several of the author's points relating solely to periodontitis are reasonably valid, his whole theme suggests a return to a narrow approach to oral examination and could be a serious disservice to the slowly advancing standards in that area of dentistry.

The opening statement about bite-wing radiographs makes astonishing reading in 1961. Teachers in oral diagnosis and radiology, in the years following the 1936 Blaich Curriculum Survey of Dentistry, have been attempting to carry oral examination beyond the restricted, two bite-wing, departmental type of examination. The author's conclusion that in a careful (but limited) clinical examination for minor forms of periodontal disease, radiographs may not be necessary reveals an unfortunate lack of understanding of the concept of complete oral examination. If the mouth is to be thoroughly examined for all aspects of oral disease, then some form of complete intraoral radiographic survey is necessary, especially for the new patient. The full-mouth survey was never intended solely for the use of one group of dental specialists.

If the article had directed attention toward the frequent misuse of radiographs especially in the periodontal field, rather than attempting to show why they need not be used at all, then a useful purpose might have been

served. All teachers of radiology are more than anxious to condemn the prodigal use of radiographs and their substitution for careful clinical examination. Surely, in spite of current abuse, no one could seriously consider their non-use in examination with the frightening prospect of reliance on a relatively crude procedure such as percussion. It is not necessary to list the many developmental and pathological conditions common to bony structures to justify the radiographic survey as a protective screening measure and an invaluable aid to diagnosis.

One would really like to think that the author intended to emphasize the need for more care in clinical examination and that rather than attempting to discourage the use of radiographs, he intended to suggest the intelligent use of those taken. While an examination for a segment of the patient's dental problem could be done without radiographs, anything pretending to thorough oral examination requires their use.

R. G. Stephens, D.D.S.,
Ashbrittle, Wellington,
Somerset, England.

To the Editor:

I have considered statements expressed in a letter from Dr. R. G. Stephens of Ashbrittle, Wellington, England. They relate to the article "The Radiograph in Periodontology" by Dr. J. R. Trott. Dr. Trott and Dr. Stephens agree concerning main issues that directly relate to the topic and they disagree beyond the proper limits of the subject under discussion.

Dr. Trott seems to contend that nearly all the main manifestations of periodontal disease can be more accurately assessed by direct clinical examination than by use of radiographs. I agree.

Dr. Stephens seems to condemn "the frequent misuse of radiographs especially in the periodontal field" and "their substitution for careful clinical examination" and I heartily agree with him, too.

While Dr. Stephens agrees that "examination for a segment of the patient's dental problem could be done without radiographs",

he also states "If the mouth is to be thoroughly examined for all aspects of oral disease, then some form of complete intra-oral radiography is necessary."

Dr. Trott's topic was "The Radiograph in Periodontology", and he wasn't supposed to be speaking of "all aspects of oral disease", but Dr. Trott did include sections on dental caries and on non-vital teeth. This part of the argument is confusing, since both opponent and proponent seem to be exceeding

the limits of the announced topic of the article.

If the article and the discussion promote intense direct clinical examination as a main phase and radiographs as a usual supplementary phase of examination for periodontal disease, we shall have reason to be indebted to both Dr. Trott and Dr. Stephens.

C. H. M. Williams, D.D.S.,
Professor of Periodontology,
Faculty of Dentistry,
University of Toronto.

BOOK REVIEWS

THE PATTERN OF PROGRESSIVE MINERALIZATION IN HUMAN DENTAL ENAMEL

H. S. M. Crabb and A. I. Darling. Oxford, Pergamon Press, 1962. 99 p. Illus. \$5.50.

For the last twenty years the theory that enamel is first formed and partly mineralized, and then reaches its full mineralization by maturation has been accepted. The textbooks accepted Weinmann's concept that maturation commences in each area after the full width of its matrix has been formed. This concept allowed a classification of hypoplasias, hypomineralisation and other phenomena.

This monograph reviews details of mineralization revealed by recent research. It is divided into three parts: microradiography, polarized light and decalcified material. The study is based on material from human fetuses and infants, covering development from 26 weeks in utero to 78 weeks after birth and a few specimen of up to seven years.

Microradiography of ground sections shows the degree and pattern of mineralization with satisfactory accuracy; in some cases, quantitative microphotometric assessment has been made.

The maturation process begins in the cusps and incisal tips, approximately as illustrated in the diagrams seen in the textbooks. Then the pattern becomes irregular, continuing by a process of mineralization which proceeds from the amelodentinal junction to the surface and by the mineralization of a thin surface zone.

The chapter on polarized light explains the difficulties and inaccuracies of this technique in the study of developing enamel. The results of the authors' complicated interpretation of optical phenomena and imbibition do not disagree with those of microradiography.

The authors conclude that the staining of decalcified sections bears no relationship to the degree of mineralization. The view that the loss of enamel in decalcified sections cannot be regarded as a criterion of its degree of mineralization is illustrated by one microradiograph and references from the literature not related to the phenomenon; the explanation of the loss of enamel is rather vague.

One might wonder why the authors who express considerable criticism of the "unwarranted assumptions" of the early workers in this field included this chapter in their book.

Two things are necessary for progress in science: to notice new facts and observe them by correct techniques, and to under-

stand the reasons for the facts using a certain amount of scientific imagination. The reader who appreciates new facts will be highly satisfied with this book. The reader who likes to know the "why" of the facts will have to do his own thinking. The authors deliberately avoid discussion of many questions which an advanced reader would like to read.

This work differs markedly from the type of monograph which attempts to impress the reader by its sheer volume, due to frequent repetition and the discussion of trivia. This book is characterized by an excellent arrangement of the subject, a clear and concise style, outstanding illustrations, the whole being published on paper of excellent quality. Even a dentist who is not particularly interested in the subject will read this book with pleasure.

Z. Mézi

ACCEPTED DENTAL REMEDIES, 1962

Council on Dental Therapeutics, American Dental Association. Ed. 27. Chicago, American Dental Association, October 1961. 249 p. \$3.00.

This book should be in every dental office. It describes all the drugs and medicaments necessary for the practice of dentistry. It also describes those that the dentist may not himself prescribe but should be familiar with.

An increasing number of new drugs are being introduced to dental therapeutics. It is impossible to evaluate their effectiveness and possible side effects from the advertising literature only. *Accepted Dental Remedies* is of the greatest assistance in this respect. Each year some drugs are discovered to be much more toxic than previously thought and must be modified or discarded. No drug should be used before it is checked in *Accepted Dental Remedies* to be sure it is still acceptable.

Accepted Dental Remedies constitutes a pharmacopoeia for the dental profession. It takes a sane, conservative approach to the evaluation and recommendation of drugs. In this edition the section on "Treatment Consideration of Dental Patients Receiving Medical Care" is of prime importance, considering the many patients who are treated concurrently by a physician and a dentist. If the physician's therapy is not understood, there is danger of overlapping with the possible precipitation of undesirable side effects.

The chapter on "Treatment of Emergencies in the Dental Office" is excellent and every dentist should be well acquainted with the procedures described. Dental emergencies of

a serious nature are not common but they do occur and the dentist is responsible for carrying out supportive therapy until the arrival of a physician.

The chapter on antibiotics deals broadly with all antibiotics in use today. This chapter is very directive. There have been changes and modifications in several of these drugs during the past year. The dentist should be cognizant of these changes before administration.

The mechanism of action of the various drugs is discussed whenever possible, and, most important, toxicity and side effects are described.

This is a small, concise, inexpensive book. It should be read and kept in the office of every practising dentist. This is the best insurance against drug administration accidents.

L. E. Francis

ORAL SURGERY

W. H. Archer, Ed. 3, *Toronto and Vancouver, McAinsh & Co. Ltd., Toronto and Vancouver for W. B. Saunders Company, Philadelphia, 1961, 947 p. Illus. \$18.50.*

The third edition of Archer's *Oral Surgery* continues to be an excellent presentation of the subject and is an essential addition to the library of the dentist and dental student.

In this new edition, there has been much revision in several areas. There are many more illustrations, which are better placed in relationship to the corresponding discussion than in previous editions. The chapter on "Oral Surgery for Dental Prosthesis" includes a very detailed description of the Behrman magnetic implant denture technique.

The subject of cardiac arrest and the method of closed-chest cardiac massage has been added to the chapter on "Complications Associated with Oral Surgery".

Neglected in previous editions but now included in the chapter on "Fractures of the Mandible, Maxilla and other Facial Bones" is a quite adequate section on first aid for jaw casualties and a discussion of the acute head injury. Chapter 21 on cast or acrylic splints has been completely revised and contains many helpful suggestions regarding their use in oral and maxillofacial surgery.

Dr. Archer is to be commended for the preparation of this very fine text and for his efforts in its very adequate revision. This text must be considered as one of the most excellent books on the subject of oral surgery.

A. E. Hoffman

IN MEMORIAM

ARNOLD DENBOW ALFRED MASON —

Dr. A. D. A. Mason, Dean Emeritus of the Faculty of Dentistry, University of Toronto died on March 25, 1962. He was 84. Long active as a teacher and an officer of dental organizations, he attracted scores of colleagues by inspiring them to follow his precepts. Born in Scarborough, Ontario on January 19, 1878, Dr. Mason received his early education in Toronto. He studied dentistry first in the United States,



graduating from the Chicago College of Dentistry (Loyola University) in 1901. After a further year of study he graduated from the Royal College of Dental Surgeons of Ontario in 1902. Entering private dental practice, he joined the teaching staff of the Royal College of Dental Surgeons of Ontario and the University of Toronto in 1911. There followed successive promotions to professor in 1925, to dean of the faculty in 1936, and finally, upon retirement from the University in 1947, to Dean Emeritus. A dental lecturer for many years in the Faculty of Medicine, School of Nursing, School of Physical and Health Education and School of Hygiene of the University of Toronto, Dr. Mason was also active in the development of the dental service at the Toronto General Hospital. Between 1913 and 1918 he served as a captain in the Canadian Army Service Corps. Dr. Mason

had a long association with Canadian and international dental groups. As well as being president of the Toronto Dental Association (precursor of the Academy of Dentistry, Toronto) in 1911-12, he was president of the Royal College of Dental Surgeons of Ontario from 1923-1925, secretary of the Dominion Dental Council of Canada from 1934-1936, and president of the American Association of Dental Schools from 1947-1948. The recipient of numerous honours, Dr. Mason was an honorary life member of Toronto Academy of Medicine and the Royal College of Dental Surgeons of Ontario. He was a member of the honour dental fraternity Omicron Kappa Upsilon and a fellow of the American College of Dentists. In 1959 he was awarded an honorary doctorate of laws on the occasion of the opening of a new building housing Toronto's dental faculty. Dr. Mason's special interest in preventive dentistry and dentistry for children was reflected in his association with the late Dr. W. Dafoe in the care of the Dionne quintuplets. This story was recorded in 1939 in a monograph entitled *The Dental Story of the Quintuplets*. In spite of a busy professional life, Dr. Mason found time to enjoy the fine arts, being a noted collector of items by Canadian artists. Dr. Mason is survived by a daughter, Mrs. Howard Small of Guelph and a granddaughter, Mrs. Gordon Morton of Hamilton.

JOHN ALEXANDER DUNCAN —

Dr. John Alexander Duncan of Calgary, Alberta died in March 1962. He was 38. Dr. Duncan was born in Wolseley, Saskatchewan in 1924. He studied dentistry at McGill University, Montreal, graduating in 1952. Thereafter he attended the School of Hygiene and Faculty of Dentistry, University of Toronto, receiving his diploma in Dental Public Health in 1955. Dr. Duncan subsequently served as dental director for the Calgary health department for a number of years. He was latterly in private practice in that city. Dr. Duncan was active on behalf of the Alberta Dental Association, serving as chairman of a committee developing a plan for prepaid dental care.

JOHN CLARENCE GRANT — Dr. John Clarence Grant of Glace Bay, Nova Scotia died on March 8, 1962. He was 84. Dr. Grant studied dentistry at the Pennsylvania College of Dental Surgery, graduating in 1900. He is survived by one son and five sisters.

EARL WILFRED GRENZEBACH — Dr. Earl Wilfred Grenzebach of Worcester, New York, died on March 1, 1962. He was 72. Dr. Grenzebach was born in 1891 at Blenheim, Ontario. He received his early education in Peterborough, Ontario. During the first world war Dr. Grenzebach served in the Royal Canadian Army Signal Corps in France and England. He received his dental training at the Royal College of Dental Surgeons of Ontario, graduating in 1923. He is survived by his wife, Marjorie; son, Captain Earl W. Grenzebach Jr., U.S. Air Force, of Orrington, Maine; three sisters, Mrs. Alfred Marriott of Toronto, and Misses Ada and Helen Grenzebach of Welland, Ontario; and half-brother Carl Grenzebach of Elmira, Ontario.

JOSEPH ROYDEN JEFFERY — Dr. Joseph Royden Jeffery of Kirkland Lake, Ontario, died on February 26, 1962. He was 61. Dr. Jeffery was born in Arnprior, Ontario in 1900. He studied dentistry at the Royal College of Dental Surgeons of Ontario and graduated in 1924.

PIERRE IVAN LABELLE — Le Dr Pierre Ivan Labelle de Montréal, âgé de 67 ans, est décédé au mois de mars, 1962. Il était né à St-Jacques L'Achigan, P. Qué. en 1894. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1923.

WILLIAM REGINALD MORRISON — Dr. William Reginald Morrison of Winnipeg, Manitoba died on March 13, 1962. He was 78. Dr. Morrison was born in Waddington, New York in 1884. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1920. He practised in both Virden and Winnipeg, Manitoba. Dr. Morrison was on the dental staff of the Winnipeg Public School Board. He is survived by two sisters, Mrs. J. Gordon Phillips of Toronto and Mrs. Leo Lewis

of California; two brothers, Dr. J. F. Morrison and G. Fred Morrison of Winnipeg; three nieces, three nephews, six great nieces and three great nephews.

JUDSON PULKINGHORN — Dr. Judson Pulkishorn of Peterborough, Ontario, died on February 10, 1962. He was 88. Dr. Pulkishorn was born in Pilkington Township, Ontario in 1897. He studied dentistry at the Royal College of Dental Surgeons of Ontario and graduated in 1897. He is survived by his wife, Alice; sons John Pulkishorn of Detroit and Ross Pulkishorn of Peterborough and a daughter, Mrs. Madeline Jopling.

DONALD MUIR REED — Dr. Donald Muir Reed of Middleton, Nova Scotia died on February 21, 1962. He was 64. Dr. Reed was born in Middleton, Nova Scotia in 1897. He studied dentistry at Dalhousie University, Halifax and graduated in 1922.

ROBERT ARTHUR TORRANCE — Dr. Robert Arthur Torrance of North Bay, Ontario, died on February 26, 1962. He was 66. Dr. Torrance was born in North Bay in 1893. He studied dentistry at the Royal College of Dental Surgeons of Ontario and graduated in 1923.

WILBERT ALEXANDER WEIR — Dr. Wilbert Alexander Weir of Winnipeg, Manitoba, died on March 5, 1962. He was 70. Dr. Weir was born in Greenock, Ontario in 1892. He received his early education in Minnitonas, Manitoba and later studied dentistry at the Royal College of Dental Surgeons of Ontario where he graduated in 1918. Dr. Weir set up practice in Dauphin, Manitoba at that time. He was the first dentist to operate a dental clinic at St. Boniface Hospital, Winnipeg and in recent years held the position of chief of Dental Service. He is survived by two daughters, Sheryl and Wilda; son, Ray of Chicago; brothers, Howard and George of Winnipeg, John of Headingley, and Dr. Milton H. Weir of Colorado Springs; sisters, Mrs. A. G. McLean of Toronto, Mrs. Agnes M. McLean of Kansas City and Mrs. S. L. McLean of Vancouver.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
May 12, 1962	Ontario Unit, Canadian Society of Dentistry for Children	Sheraton-Connaught Hotel, Hamilton	Dr. D. L. Rife	2014 Bathurst St., Toronto, Ont.
May 13-16, 1962	Ontario Dental Association Convention	Royal York Hotel, Toronto	Mrs. W. C. Durham	230 St. George St., Toronto 5, Ont.
24-26 mai 1962	Congrès de l'Association dentaire de la province de Québec	Hôtel Chicoutimi, Chicoutimi	Dr. J. C. Simard	397 Racine Est, Chicoutimi, P.Qué.
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eaton	Farquhar Bldg., Halifax, N.S.
June 30-July 7, 1962	Intl. Conference on Health and Health Education	Philadelphia, Pennsylvania	Conference Secretariat	800 Second Ave., New York 17, N.Y.
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.1, Eng.
July 16-18, 1962	Symposium on Psychodontics	Villa Olmo, Como, Italy	Dr. B. Acht	Piazzetta Umberto Giordano 2, Milan, Italy
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Bldg., Prince Albert, Sask.
Sept. 19-22, 1962	IIIrd Congress of the Yugoslav Dental Assn.	Ljubljana, Yugoslavia	Dr. V. Krusic	2 Zaloska, Ljubljana, Yugoslavia
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Ave., Montreal, P.Qué.
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior St., Chicago, Ill.

POSTGRADUATE AND REFRESHER COURSES (CANADA)

McGILL—A postgraduate course in AMALGAM and INLAY RESTORATIONS in operative dentistry will be offered at the Faculty of Dentistry, McGill University, June 18-20, 1962.

Inquiries and applications should be directed to the Dean, Faculty of Dentistry, McGill University, Montreal, P.Qué.

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institutions.

L'Association Dentaire Canadienne.

JOURNAL

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Mémoire soumis par la Société dentaire de Montréal
à la Commission royale d'enquête sur les services de
santé du Canada*

I. PRÉAMBULE

La Société dentaire de Montréal est un organisme dont le principal objectif est de parfaire la formation scientifique de ses membres par des conférences, des cliniques et des congrès.

Cette société est libre, c'est-à-dire que ses membres adhèrent volontairement à ses activités et qu'ils paient une cotisation annuelle; elle groupe en général donc les meilleurs éléments de la profession dentaire de Montréal et de ses environs.

La Société dentaire de Montréal constitue le groupement scientifique le plus

considérable d'expression française au Canada; elle compte 300 membres actifs et associés. Elle a des rapports étroits avec la faculté de chirurgie dentaire de l'Université de Montréal où la plupart de ses membres ont fait leurs études professionnelles. La Société s'intéresse activement à l'amélioration de la santé dentaire de la population de la métropole du Canada et elle profite de la création de la Commission d'enquête sur les soins de santé pour suggérer des idées propres à doter la population de notre pays d'une meilleure santé dentaire.

Le problème de la santé dentaire est compliqué, surtout dans la province de

*Le 11 avril 1962.

Québec, où, d'après des enquêtes qui ont été faites, les dents des deux tiers de la population sont dans un état pitoyable.

On ne saurait régler ce problème par des solutions simplistes, car il a des répercussions dans plusieurs domaines: économique, éducatif, professionnel.

La Société dentaire de Montréal, pour situer d'une façon plus précise les suggestions qu'elle soumet à la Commission pour solutionner la question de santé dentaire de la population de Montréal, divise son mémoire en deux parties:

- A. Moyens à effet rapide pour solutionner le problème de la santé dentaire
- B. Moyens qui, à longue échéance, amélioreront la situation

II. MOYENS À EFFET RAPIDE

A. Fluoruration

1. *Fluoruration de l'eau de consommation.* — On ne résoudra jamais le problème de santé dentaire qu'à la seule condition d'abaisser la fréquence et l'incidence des maladies dentaires. Le premier pas à faire est de fluorer l'eau de tous les aqueducs où la teneur de fluor n'atteint pas une partie de fluor par un million de parties d'eau.

2. Cette mesure d'hygiène publique atteint tous les citoyens, riches comme pauvres; des recherches entreprises depuis au-delà de vingt ans ont prouvé sa valeur et son innocuité.

3. La Commission d'enquête d'Ontario sur la fluoruration, dans son rapport remis en 1961, après avoir consacré deux ans à cette étude et après avoir consulté tous les scientifiques susceptibles de l'éclairer dans son travail, a recommandé au gouvernement de cette province de mettre en œuvre le plus tôt possible cette mesure sans aucune arrière-pensée.

4. La Société dentaire de Montréal, devant l'urgence que crée le problème de la carie dentaire, recommande que les législatures provinciales rendent obliga-

toire la fluoruration de l'eau des aqueducs par des lois semblables à celles qui existent pour contrôler la qualité de l'eau.

5. On recommande de plus qu'une province qui rend obligatoire la fluoruration fasse appel au gouvernement fédéral pour que celui-ci l'aide à défrayer le coût de cette mesure; le gouvernement pourrait payer 50% des déboursés et les provinces et les municipalités, chacune 25%.

La fluoruration abaisserait en moyenne de 60% l'incidence de la carie dentaire. Cela veut dire une diminution considérable des frais de traitement et un soulagement notable au sein des effectifs chargés de ces traitements.

6. Cette mesure équivaldrait à tripler le nombre actuel de dentistes disponibles.

7. *Application topique des fluorures à l'échelle nationale.* — Il a été démontré, en 1948, alors que le Congrès américain avait voté \$1,000,000 pour des recherches sur la valeur de l'application topique de fluorure de sodium, en solution à 2%, que cette mesure prophylactique réduisait d'environ 40% l'incidence de la carie.

8. Il serait recommandable que, dans les endroits où la fluoruration n'est pas applicable, tels que les régions où les municipalités ne jouissent pas d'un approvisionnement d'eau communale, des octrois soient disponibles pour la mise en œuvre de programmes d'applications topiques pour que les enfants de 3 à 14 ans et, si les circonstances l'exigent, qu'on forme des auxiliaires telles que des hygiénistes dentaires, des techniciennes, des infirmières hygiénistes, pour effectuer ce traitement qui est de nature tout à fait préventive.

B. Augmentation du nombre des dentistes

9. Une autre cause de l'état lamentable des dents de la population de la province de Québec et du grand nombre de personnes, même jeunes, qui aient des prothèses complètes est la pénurie de dentistes, surtout dans les centres ruraux.

TABLEAU 1 Coût des études professionnelles.*

Cours	Université					
	Dalhousie \$	McGill \$	Montréal \$	Toronto \$	Manitoba \$	Alberta \$
Architecture		3,150		2,750	1,750	
Commerce	1,360	1,700		1,600	1,100	980
Chirurgie dentaire	2,590	2,850	1,900	2,570	2,200	1,805
Génie		2,625		2,200	1,400	1,200
Droit	2,540		1,125	1,940		1,225
Médecine	3,565	4,100	2,625	3,140	2,750	2,380
Pharmacie			1,700	1,600	1,200	765

Coût des études universitaires seulement. Tous ces cours sont précédés par quatre années d'arts.

*Frais de scolarité seulement.

Sur un total de 1,388, environ 900 exercent dans les villes.

10. La province de Québec a un dentiste par 3,679 habitants, le Canada en général un par 3,037 et l'Ontario un par 2,423.

11. L'enquête entreprise, il y a deux ans, aux Etats-Unis, sur toutes les phases de la question dentaire, a révélé que, pour rencontrer les besoins actuels, un équilibre de 1:1000 était nécessaire.

12. On peut se demander pourquoi la province de Québec a un nombre si peu élevé de dentistes en rapport avec sa population. Les causes peuvent se résumer ainsi:

13. Les frais des études en chirurgie dentaire sont les plus élevés de toutes les disciplines universitaires (Tableau 1).

14. Les élèves doivent acheter un outillage élaboré et dispendieux. Les déboursés annuels d'un étudiant s'établissent entre \$600 et \$1400. Le total des quatre années d'études se situe à environ \$3,600 et plusieurs d'entre eux doivent faire une année supplémentaire en sciences avant d'entrer à la faculté. Il faut ajouter à ce chiffre les droits d'inscription, de licence et d'examen au Collège des Chirurgiens-Dentistes de la province de Québec et l'acquisition de fournitures courantes. La somme qu'un étudiant doit dépenser pour des frais strictement scolaires, durant ses études, se chiffre en moyenne à \$4,000.

15. Il faut additionner à ce montant les frais de subsistance qui, pour un élève

dont les parents ne vivent pas à Montréal, s'établissent facilement à \$1,000 par année.

16. Donc le diplômé en chirurgie dentaire a dépensé \$8,000 pour ses études.

17. Il doit après son cours organiser son cabinet: il lui en coûte entre \$7,000 et \$10,000.

18. Le dentiste, donc, avant même qu'il ait posé un geste rémunérateur, assume un passif de \$15,000 à \$18,000.

19. Quelques étudiants des collèges, qui feraient d'excellents dentistes, embrassent d'autres carrières, parce que les études de chirurgie dentaire et l'ouverture d'un cabinet représentent des frais trop onéreux en rapport avec les revenus qu'ils retireront de l'exercice de cette profession.

20. Il faudrait donc, si on veut augmenter le nombre des dentistes pour faire face à l'accumulation des traitements qui ont été négligés, instituer un système de bourses pour les étudiants en chirurgie dentaire.

21. La Société dentaire de Montréal recommande d'intensifier le recrutement surtout chez les candidats venant des petits centres, car l'expérience prouve que des étudiants venant de la campagne retournent exercer plus spontanément dans les localités dans lesquelles ils ont vécu.

22. La Société recommande de plus des prêts particuliers pour les étudiants en chirurgie dentaire. Un étudiant pourrait emprunter jusqu'à \$1,000 par année, et cet emprunt serait remboursé après son cours

d'études. Par exemple, si un étudiant emprunte \$500 par année, durant son cours, il remettrait les \$2,000 à raison de \$500 par année, durant les quatre ans qui suivent la fin de ses études. Les prêts durant cette période seraient sans intérêts. On donnerait la préférence (a) aux étudiants venant de l'extérieur de Montréal; (b) aux étudiants éloignés de leur foyer. Le Congrès américain vient de ratifier une loi qui a la même portée. On pourrait inciter les nouveaux diplômés à se fixer dans des régions rurales (a) en leur fournissant un cabinet tout équipé, de préférence dans l'hôpital de la région, (b) en leur garantissant un revenu minimum en échange de services qu'ils prodigueraient aux enfants.

23. Le ministère provincial de la santé, en collaboration avec la profession dentaire, pourrait étudier les demandes des municipalités pour un dentiste en se rendant compte si la population de ces villes est suffisante pour y faire vivre un dentiste et en évitant d'empiéter sur un territoire déjà servi par un autre dentiste. La province et la municipalité, si toutes les conditions conviennent, pourraient déviser également les déboursés qu'entraînerait cette initiative.

24. La Société dentaire de Montréal se prononce contre l'établissement *immédiat* d'une autre faculté dentaire dans la province de Québec, pour les raisons suivantes:

(i) il y a déjà deux facultés dentaires au Québec;

(ii) les cadres de la faculté dentaire de l'Université de Montréal ne sont pas remplis;

(iii) une nouvelle faculté dentaire drainerait nécessairement une partie du personnel enseignant de l'Université de Montréal et créerait deux facultés de valeur médiocre;

(iv) il vaut mieux avoir une seule faculté bien organisée;

(v) la faculté de Montréal ne fait qu'arriver à un rendement souhaitable.

C. Formation de personnel auxiliaire

25. Le dentiste pourrait accroître son rendement en cabinet, s'il était assisté de personnel auxiliaire compétent et à qui il confierait certaines tâches qui ne nécessitent pas de formation professionnelle.

26. Il faut augmenter le nombre des auxiliaires et agrandir leur champ d'action. On pourrait, en établissant officiellement des programmes appropriés d'entraînement, améliorer le rendement des assistants et des techniciens.

27. *Hygiénistes.* — Le premier pas à faire consiste à créer dans les facultés dentaires des écoles d'hygiénistes dentaires. Cette profession s'exerce depuis longtemps aux Etats-Unis et dans certaines provinces du Canada et on a suffisamment d'expérience sur ses prérogatives et son curriculum d'enseignement qu'on peut sans tarder fonder des écoles d'hygiénistes dentaires au sein des facultés qui sont les endroits tout indiqués pour ce genre de formation.

28. Les étudiants en chirurgie dentaire pourraient s'entraîner sur place à travailler en collaboration de ces hygiénistes.

29. Les unités sanitaires de la province, les écoles, les services dentaires municipaux et provinciaux pourraient utiliser avec grand profit la compétence de ces auxiliaires.

30. La Société dentaire de Montréal recommande que le gouvernement fédéral, par l'entremise du gouvernement provincial, donne une subvention à l'Université de Montréal pour l'établissement d'une école d'hygiénistes dentaires.

31. *Assistants.* — La question des assistantes est plus compliquée, car leur champ d'action est plus limité. Elles sont formées par les dentistes qui les emploient et elles ne doivent pas répondre à des exigences scolaires rigides.

32. Elles pourraient difficilement être formées à l'Université puisqu'elles ne répondent pas aux exigences d'admission au niveau universitaire et qu'elles ne pourraient pas recevoir de diplôme universi-

taire. La Société dentaire de Montréal recommande de subventionner des études-témoins ou des recherches sur le rendement du personnel auxiliaire pour qu'on puisse trouver les meilleures façons d'utiliser son travail en exercice privé et dans des services de santé publique. Cette étude fournirait des renseignements précieux sur la façon d'intégrer efficacement les auxiliaires dentaires dans l'équipe de santé dentaire.

33. *Techniciens.* — Trop longtemps, la profession dentaire s'est désintéressée des techniciens dentaires. Pourtant, les dentistes, sans l'assistance des techniciens dentaires, ne pourraient pas prodiguer la somme actuelle des traitements.

34. Les dentistes se doivent de donner aux techniciens un entraînement conforme aux données de la science contemporaine. Comment s'établiront ces rapports officiels entre les dentistes et les techniciens? Comment s'élaborera la formation que devraient recevoir les techniciens? Où se donnera cet entraînement?

35. Autant de questions auxquelles la Société dentaire ne peut pas répondre mais qui doivent faire l'objet de recherches et d'études. La Société dentaire de Montréal suggère qu'un octroi soit mis à la disposition de la profession dentaire pour qu'elle entreprenne en collaboration avec les techniciens, au niveau national, des recherches sur cette question; et que le gouvernement fédéral et celui des provinces s'entendent pour inclure au nombre des cours d'arts et métiers qui reçoivent des allocations ceux des techniciens et des assistantes dentaires.

D. Déboursés pour des études post-universitaires

36. Les dentistes, pour améliorer les services qu'ils prodiguent à la population de Montréal et de ses environs, devraient être encouragés à poursuivre leur formation au-delà du stage universitaire qui leur donne le droit d'exercer.

37. Ces cours post-universitaires n'entraînent pas seulement des dépenses pour des frais de scolarité, mais aussi une perte de revenus pour ceux qui laissent leur cabinet, car les dépenses fixes de ces cabinets se poursuivent durant l'absence du dentiste. Ces dépenses empêchent plusieurs dentistes d'assister à des cours de perfectionnement ou à d'autres genres de cours d'études post-scolaires. La Société dentaire de Montréal recommande que les règlements d'impôt fédéral et provincial soient amendés pour permettre aux dentistes qui assistent à des cours donnés sous l'égide universitaire ou d'associations dentaires reconnues de déduire certaines dépenses de leurs revenus.

E. Intégration de l'enseignement d'hygiène dentaire dans les facultés de médecine

38. Les médecins jouent un rôle immense dans le maintien de la santé en général. Leur rôle dans le domaine de la santé dentaire pourrait être plus considérable s'ils avaient des notions précises sur l'hygiène dentaire et sur les méthodes qui sont à la disposition des dentistes pour prévenir et guérir les maladies qui se manifestent dans la bouche de nos concitoyens. Or le curriculum actuel des études médicales ne renferme que des notions imprécises et indirectement rattachées à la science dentaire proprement dite.

39. Les médecins et les dentistes devraient collaborer pour atténuer les effets d'une situation déplorable de la santé dentaire de la population de la province de Québec.

40. Cette collaboration pourrait être mise en acte de plusieurs façons.

41. La Société dentaire de Montréal suggère trois moyens susceptibles de familiariser les médecins avec les disciplines dentaires:

42. (i) Etablir dans les hôpitaux des services dentaires dont les fonctions seraient parallèles à celles des autres services hospitaliers, c'est-à-dire de pro-

diguer des services aux patients hospitalisés comme à ceux des dispensaires.

Les règlements de ces services dentaires devraient contenir des clauses qui permettraient aux dentistes dûment nommés membres du personnel professionnel de l'hôpital de prodiguer des services qui seraient en accord avec les notions les plus récentes de la science dentaire.

La loi provinciale ou les règlements des hôpitaux devraient être conçus de façon à permettre aux dentistes qui font partie du personnel d'admettre leurs patients dans les hôpitaux au même titre que les autres disciplines de l'hôpital.

Les patients admis pour des traitements dentaires devraient subir un examen médical par un médecin.

Un système d'internat dentaire pourrait être facilement organisé. L'établissement d'un service dentaire actif dans un hôpital serait de nature à favoriser cette collaboration essentielle à l'expansion de l'hygiène dentaire.

43. (ii) Les cours d'hygiène dentaire, à l'école d'hygiène, devraient prendre plus d'ampleur. Tous ceux qui s'intéressent à l'hygiène se doivent de connaître l'acuité du problème dentaire dans la province et les moyens susceptibles de l'atténuer.

Une plus grande attention devrait être portée à l'importance de l'hygiène dentaire comme facteur de santé.

44. (iii) Cette attention devrait être portée au curriculum général de la faculté de médecine. L'enseignement de l'hygiène dentaire publique et de la dentisterie préventive devrait être plus élaboré et plus spécialisé aux niveaux universitaires et post-universitaires en vue d'orienter davantage les efforts vers l'importance de l'éducation et de la prévention.

F. Plan de traitements dentaires

45. Des statistiques compilées par l'Association dentaire canadienne pour tout le Canada indiquent que seulement 1/3 de la population se fait traiter régulièrement chez le dentiste.

46. La Société dentaire de Montréal croit que ces chiffres s'appliquent dans son milieu.

47. Les gens ne se font pas traiter pour deux raisons:

- (a) éducatives
- (b) économiques

48. Les revenus moyens des Montréalais ne leur permettent pas de se faire soigner régulièrement les dents. La plupart des gens vont chez le dentiste pour des traitements d'urgence ou palliatifs.

49. Des statistiques publiées récemment par le Bureau des recherches économiques de l'Association dentaire canadienne montrent que la moyenne des revenus annuels des dentistes de la province de Québec sont les plus bas au Canada.

50. On ne peut donc pas conclure que les honoraires élevés perçus par les dentistes de cette province éloignent les patients des cabinets dentaires: au contraire, la modicité de ces honoraires sont de nature à répandre les soins.

51. La Société dentaire de Montréal, face à la moyenne des revenus modiques de la population et de l'accumulation des défauts dentaires chez l'adulte, se prononce en faveur d'un système d'assurance-santé dentaire à certaines conditions, qu'on peut appeler principes.

(i) Il faudrait, à l'aide d'enquêtes entreprises au préalable et répétées chaque année sur les besoins de la population, sur les effectifs de la profession et sur les fonds disponibles, déterminer quels groupes d'âge devraient être couverts par ce plan de traitement. On devrait, si possible, commencer par tous les enfants de trois à six ans, en gardant dans le plan, chaque année, les enfants qui ont vieilli d'un an. Ainsi, dans dix ans, tous les enfants jusqu'à l'âge de seize ans feraient partie du plan.

(ii) Le système d'assurance-santé dentaire pourrait comprendre les adultes, qui après enquête sociale sérieuse entreprise sur leur statut économique, n'ont pas les moyens de faire traiter leurs dents. Une attention particulière serait portée aux vieillards qui n'ont, comme moyen de subsistance, que leur pension de vieillesse.

(iii) Les dentistes devraient prodiguer leurs services dans leur cabinet privé.

(iv) Ce paiement des services devrait se faire sur une base d'une somme pour chaque traitement selon une liste d'honoraires acceptable par la profession.

(v) Les dentistes, à leur choix, adhèreraient ou non au plan.

(vi) Les patients paieraient leurs traitements et seraient remboursés par l'Etat.

(vii) Un patient aurait le droit de choisir son dentiste et, par ailleurs, le dentiste aurait le droit de choisir ses patients.

(viii) Le plan serait administré par une corporation mise sur pied par la profession sur une base provinciale; cette corporation serait administrée par un conseil de direction comptant des profanes et des dentistes.

(ix) La conduite des dentistes serait surveillée par les comités de discipline de la profession.

(x) Les services prodigués par les spécialistes seraient reconnus que si les patients leur sont référés par des omnipraticiens.

(xi) Il faudrait établir un ordre de priorité pour les traitements de façon à diminuer les demandes pour les traitements considérés comme définitifs (p.e. ponts, prothèses, etc.) aussi pour qu'un plus grand nombre de patients puissent progressivement recevoir les traitements considérés comme essentiels (p.e. soins d'urgence) et qui contribuent le plus à préserver l'intégrité des dents et de leurs tissus de support (p.e. traitements préventifs et traitements d'entretien). La Société suggère la priorité suivante pour les traitements dentaires:

—traitements d'urgence pour soulager la douleur et prendre soin des infections;

—examens périodiques cliniques et radiologiques; prophylaxie, applications topiques de substances prévenant la carie; revue des habitudes alimentaires et hygiéniques; examens supplémentaires (p.e. tests de susceptibilité à la carie);

—soins planifiés et continus pour garder la bouche dans le meilleur état possible; obturations des caries; traitement précoce des affections des gencives; prévention et arrêt précoce des malocclusions;

—traitements définitifs, tels que prothèses et traitement des malocclusions.

Pour prélever des fonds pour le financement de ce système, il serait bon de songer à imposer des taxes sur des aliments ou des breuvages non essentiels qui favorisent la carie dentaire; ces taxes spéciales pourraient contribuer indirectement au contrôle de la carie.

53. L'opinion générale est ainsi formulée: la situation actuelle des générations d'âge scolaire et adulte est telle que donner des soins à tous est impensable. Le nombre des dentistes est insuffisant. Mieux vaut fournir à ces générations des principes d'éducation qu'ils pourront utiliser et transmettre à leurs descendants. Pour les soins, on devrait s'en tenir aux bouches qui sont encore saines, soit celles des enfants.

54. On peut croire que le nombre limité de dentistes par rapport à la population ne pourrait pas répondre aux demandes qui seraient suscitées par l'avalanche de traitements qu'une telle mesure sociale pourrait entraîner.

55. C'est pourquoi, la Société dentaire de Montréal recommande que seuls les enfants d'âge pré-scolaire et les indigents puissent profiter des avantages d'un système d'assurance-santé dentaire.

56. De plus, deux raisons freineraient les demandes pour des traitements:

(a) l'éducation du public en matière dentaire

(b) la nature même des traitements qui n'ont rien d'attrayant.

III. MOYENS À LONGUE ÉCHÉANCE

57. Le dentiste contemporain doit se contenter de traiter les effets de la maladie et réparer ses dégâts, sans s'attaquer aux

causes de ces maladies. Et le propre d'une profession de santé est de prévenir les maladies par des mesures appropriées. On pourra prévenir les maladies des dents et des tissus de la cavité buccale par les moyens suivants:

- (a) recherches
- (b) éducation

A. Recherches

58. Les recherches dans le domaine dentaire sont susceptibles de trouver des méthodes de prévenir les maladies dentaires, d'en traiter plus efficacement et plus rapidement les causes et les effets et d'augmenter le rendement du dentiste.

59. On consacre actuellement \$1 à la recherche sur \$400 pour des traitements, tandis qu'en médecine, on consacre \$1 sur \$60. Il faudra augmenter considérablement l'argent disponible pour les recherches, si on veut solutionner la question de santé dentaire.

60. Les organismes fédéraux qui aident actuellement aux recherches dentaires doivent réaliser la nécessité de former du personnel pour ce genre de travail, d'augmenter le nombre de ceux qui s'y consacrent et de leur fournir suffisamment d'argent pour mener à bien leurs projets.

61. Il faudra augmenter les sommes destinées aux recherches dentaires parallèlement à celles consacrées à d'autres projets de recherches qui se font de plus en plus nombreux.

62. En intensifiant les recherches, on peut accorder un apport considérable à l'enseignement, à l'exercice et à la prévention.

B. Education

63. La prévention des maladies dentaires, contrairement à certaines autres maladies, dépend surtout de l'individu lui-même. Il faut éduquer les gens en hygiène dentaire pour les rendre conscients de ce fait. Il y a actuellement au Canada des campagnes importantes d'édu-

cation en hygiène dentaire qui se font à divers degrés. Des campagnes du genre devraient se faire dans toutes les régions ou dans toutes les unités sanitaires de la province; elles devraient être sous la direction de dentistes spécialisés en hygiène publique.

64. Puisque le problème de la santé dentaire est en déséquilibre total avec les possibilités de traitement par l'ensemble de la profession, l'orientation doit être faite d'abord vers l'application des mesures qui peuvent contribuer à en diminuer l'intensité.

65. Ces campagnes devraient s'adresser aux enfants d'âge pré-scolaire et aux jeunes écoliers. On devrait examiner périodiquement ces enfants et, si des traitements s'imposent, les diriger chez les praticiens privés en avertissant les parents. On devrait enseigner aux enfants des méthodes reconnues d'hygiène dentaire et de nutrition.

66. Il faudrait aussi promouvoir l'hygiène dentaire au niveau des écoles primaires et secondaires, afin de mettre en valeur l'importance de la santé dentaire comme facteur de santé générale: nutrition, hygiène buccale à domicile, élimination des sucres, amidons, pâtisseries, etc.

67. Ces campagnes feraient connaître les bienfaits d'une bonne santé dentaire et réduiraient considérablement, au profit des parents, l'accumulation des traitements retardés.

68. Les gens seraient invités à se préoccuper des traitements avant que les lésions deviennent graves.

69. Il faudrait former des hygiénistes dentaires, au niveau des services publics de santé; ces hygiénistes pourraient être utilisées dans l'enseignement de l'hygiène, dans les programmes d'éducation et d'examen dentaires scolaires et au niveau du praticien où elles pourraient, grâce à leur compétence et leurs connaissances pratiques, effectuer certains travaux d'ordre secondaire, libérant ainsi le dentiste pour des travaux essentiels.

70. Il faudrait augmenter, par la distribution de bourses et d'octrois, le nom-

bre des dentistes hygiénistes dans les services gouvernementaux de santé, indépendants ou volontaires, afin de promouvoir l'éducation dentaire et l'enseignement au niveau des écoles normales et de toute autre école d'enseignement supérieur.

71. Personnel additionnel nécessaire.

Dentistes hygiénistes:

au niveau de la province	8
intégration des dentistes hygiénistes de la Ligue d'hygiène dentaire	16
Montréal	6
Québec	2

—
32

Hygiénistes dentaires:

au niveau de la province	20
Montréal	6
Québec	2

—
28

72. Le financement de ce système se ferait grâce à des subventions des gouvernements fédéral et provincial et des municipalités.

73. L'éducation en hygiène dentaire est un des facteurs les plus importants pour le contrôle éventuel des maladies dentaires.

RECOMMANDATIONS

1. Fluoruration obligatoire de l'eau des aqueducs, grâce à des octrois du gouvernement.

2. Application topique des fluorures par un personnel auxiliaire.

3. Augmentation du nombre des dentistes, grâce à des bourses et des prêts.

4. Opposition à l'établissement immédiat d'une autre faculté dentaire dans la province de Québec.

5. Etablissement d'écoles d'hygiénistes dentaires dans les facultés dentaires existantes.

6. Octrois pour l'étude du problème du personnel auxiliaire.

7. Amendement de la loi de l'impôt sur le revenu en vue de permettre la déduction de sommes dépensées par les dentistes

pour des études post-universitaires.

8. Intégration et amplification des cours d'hygiène dentaire dans les écoles d'hygiène et les facultés de médecine.

9. Organisation de services dentaires dans les hôpitaux.

10. Organisation d'un système national d'assurance-santé dentaire à certaines conditions.

11. Augmentation des octrois pour les recherches dentaires.

12. Organisation de campagnes soutenues d'éducation dentaire.

SUMMARY

The following recommendations were contained in a brief submitted by the Société Dentaire de Montréal to the Royal Commission on Health Services at Montreal on April 11, 1962:

1. Compulsory fluoridation of drinking water sustained by means of government grants.

2. Topical application of fluorides by auxiliary personnel.

3. A system of scholarships and loans to stimulate an increase in the number of dentists.

4. Opposition to the immediate establishment of another dental school in the province of Quebec.

5. Establishment of schools for dental hygienists in existing dental schools.

6. Grants for the study of the problem of auxiliary personnel.

7. Amendment of the income tax law in order to permit the deduction of necessary dentists' expenses for graduate university study.

8. Integration and amplification of dental health courses in the schools of hygiene and the faculties of medicine.

9. Organization of dental services in hospitals.

10. Organization of a national system of dental health insurance under certain conditions.

11. Additional grants for dental research.

12. Policy of sustained encouragement for dental health education.

Registre des étudiants pour l'année 1961-62

Bureau des recherches économiques de l'A.D.C.

Inscription. — Mille-cinquante-deux étudiants, au cours de l'année académique 1961-62, sont aux études dans les six facultés dentaires du Canada. Il y a donc une augmentation de l'ordre de 15% sur le nombre de l'an dernier. Au cours des derniers dix ans, l'inscription des étudiants en première année a augmenté de 85%.

Quarante-deux étudiants complètent des études post-universitaires, dont trente à l'Université de Toronto et dix à l'Université de Montréal.

Vingt-et-un dentistes sont à se spécialiser: neuf en orthodontie, quatre en hygiène publique, quatre en chirurgie et les autres en périodontie et en pédodontie.

Hygiénistes dentaires. — Les universités de Dalhousie, d'Alberta et de Toronto forment des hygiénistes dentaires. Les cours à Dalhousie et à Alberta ont commencé en septembre 1961. Quatre-vingt-douze hygiénistes pourront poursuivre leurs études dans le cours de deux ans, quand les trois facultés dentaires auront rempli leurs cadres. Actuellement, quatre-vingt-cinq hygiénistes suivent les cours. Toutes les provinces du Canada, excepté

la Colombie britannique et Québec, ont des sujets qui suivent ces cours aux universités canadiennes.

Echecs. — Les échecs entre la première année du terme de 1960 et la seconde année du terme 1962 s'établissent à 11%. Vingt-quatre étudiants ont échoué leur année et six ont abandonné leurs études pour d'autres raisons.

Diplômés. — Le nombre des diplômés, en 1961, a baissé de 174, soit de 19%. On remarque avec intérêt que sept des dix femmes qui ont obtenu leur diplôme sont des étrangères. L'âge moyen des diplômés s'établit à 25 ans.

Disponibilités. — Les facultés dentaires peuvent recevoir 338 étudiants par année. Seule l'Université de Montréal a des projets précis pour augmenter ses disponibilités. Ces projets permettront à cette université de recevoir quatre-vingt-cinq étudiants par classe.

Distribution des étudiants quant à l'endroit qu'ils habitent. — Il y a 5.4 étudiants canadiens par 100,000 de population. Les

TABLEAU 1 Etudiants sous-gradués dans les facultés dentaires du Canada — 1961-62.

Faculté	Total	Année			
		1ière	2ième	3ième	4ième
Dalhousie	60	18	13	14	15
McGill	139	39	33	31	36
Montréal	172	60	28	39	45
Toronto	429	120	110	114	85
Manitoba	95	33	27	20	15
Alberta	157	50	44	33	30
Total	1,052	320	255	251	226

TABEAU 2 Etudiantes féminines dans les facultés dentaires du Canada—1961-62.

Faculté	Total		Année			
	No	Pourcentage	1ière	2ième	3ième	4ième
Dalhousie	2	3.33	2	..	..	..
McGill	3	2.15	..	..	..	3
Montréal	4	2.32	1	2	..	1
Toronto	28	6.52	6	10	7	5
Manitoba	1	1.05	..	..	..	1
Alberta	..	..	..	..	..	..
Total	38	3.61	9	12	7	10

TABEAU 3 Diplômés inscrits dans les facultés dentaires du Canada pour des études post-universitaires.

Faculté	Gradués	Post-scolaires†	Spéciaux‡
Dalhousie	0	0	0
McGill	0	0	1
Montréal	5	5	0
Toronto	5	25	0
Manitoba	0	1	0
Alberta	0	0	0
Total	10	31	1

*L'expression "Gradués" veut dire que ces diplômés sont inscrits à l'Université, dans l'Ecole pour Diplômés, pour suivre un cours qui mène à une maîtrise ou à un Ph.D.

†L'expression "Post-scolaires" veut dire que ces diplômés sont inscrits à la faculté dentaire pour y suivre un cours qui mène à un degré (p.e., B.Sc.D.), un diplôme ou un certificat.

‡L'expression "Spéciaux" veut dire que ces diplômés sont inscrits à la faculté dentaire pour y suivre un cours post-scolaire qui ne mène pas à un degré, diplôme ou certificat officiel de l'Université.

TABEAU 4 Diplômés inscrits dans chaque année de cours de spécialités dans les universités canadiennes — 1961-62.

Spécialité	Total	Année		
		1ière	2ième	3ième
Hygiène dentaire publique	4	4	..	..
Chirurgie buccale	4	2	1	1
Orthodontie	9	4	5	..
Pédodontie	1	..	1	..
Périodontie	3	2	1	..
Total	21	12	8	1

chiffres, dans les dix provinces, se situent entre 1.7 pour Terre-Neuve et 8.7 pour Manitoba. En 1957-58, c.-à-d. l'année qui précéda l'établissement d'une faculté dentaire à l'Université de Manitoba, cette province n'avait que 2.9 étudiants par 100,000 de population. Depuis quatre ans,

cette proportion a monté graduellement. Dix pour cent de tous les étudiants des facultés dentaires canadiennes viennent d'autres pays. 68% des étudiants de Dalhousie, 55% de McGill et 45% d'Alberta ne résident pas dans la province où se situe la faculté dentaire.

Coût des études.—Le coût des études dentaires, incluant les frais de scolarité et les autres dépenses inhérentes, les volumes et le matériel se chiffre en moyenne à \$3,800, par étudiant, pour les quatre années du cours. Les frais de logement et de subsistance varient selon l'endroit de la faculté et le genre de logement

disponible. Ils s'établissent à environ entre \$2,800 et \$3,000 pour les quatre ans du cours. Les frais des études prédentaires varient selon la faculté et le nombre d'années nécessaires. La moyenne du coût des études pour les cours prédentaires et le cours dentaire se chiffre à \$7,700; la moyenne est de \$8,400.

TABLEAU 5 Hygiénistes et assistantes inscrites dans les universités canadiennes — 1961-62.

Faculté	Total	Année	
		1ière	2ième
Dalhousie	8	8	..
Toronto	57	41	16
Alberta	20	20	..
Total	85	69	16

TABLEAU 6 Echecs des étudiants de première année 1961-62.

Faculté	Pertes		Raison		
	Etudiants	Pourcentage	Echecs	Changements	Autres
Dalhousie	2	15.4			2
McGill	4	10.8	4		
Montréal	9	27.3	7	2	
Toronto	7	6.2	7		
Manitoba	6	21.4	6		
Alberta	2	4.3		2	
Total	30	11.1	24	4	2

TABLEAU 7 Etudiants finissant leurs études dans les universités canadiennes—1961.

Faculté	Diplômés			Pourcentage femmes	Femmes nées à l'étranger	Pourcentage des femmes nées à l'étranger
	Total	Hommes	Femmes			
Dalhousie	13	13	0	0.0	0	SR
McGill	34	31	3	8.8	2	66.7
Montréal	31	30	1	3.2	1	100.0
Toronto	72	67	5	6.9	4	80.0
Alberta	24	23	1	4.2	0	0.0
Total	174	164	10	5.7	7	70.0

TABLEAU 8 Moyenne d'âge des étudiants dans les facultés dentaires canadiennes, 1961.

Faculté	Moyenne d'âge
Dalhousie	28
McGill	28
Montréal	27
Toronto	23
Alberta	26
Total	25

TABLEAU 9 Nombre des étudiants inscrits dans les facultés dentaires canadiennes—1952-61.

Année	Total		Faculté					
	No	Pourcentage des modifications	Dal.	McG.	Mtl	Tor.	Man.	Alta
1952-53	719	— 4.8	50	141	111	294		123
1953-54	707	— 1.7	50	142	98	299		118
1954-55	748	+ 5.8	48	138	130	313		119
1955-56	769	+ 2.8	47	136	161	310		115
1956-57	785	+ 2.1	47	137	184	305		112
1957-58	787	+ 0.3	53	141	176	310		107
1958-59	824	+ 4.7	55	144	178	319	21	107
1959-60	906	+ 10.0	60	145	172	368	42	119
1960-61	914	+ 0.9	54	140	151	371	64	134
1961-62	1,052	+ 15.1	60	139	172	429	95	157

TABLEAU 10 Nombre des diplômés dans les facultés dentaires canadiennes—1952-61.

Année	Total		Faculté				
	No	Pourcentage du changement	Dal.	McG.	Mtl	Tor.	Alta
1952	215	—27.1	12	36	55	85	27
1953	178	—17.2	14	34	20	75	35
1954	172	— 3.4	14	37	20	69	32
1955	174	+ 1.2	13	35	19	78	29
1956	168	— 3.4	13	33	20	76	26
1957	186	+ 10.7	11	29	34	78	34
1958	203	+ 9.1	16	34	49	75	29
1959	193	— 4.9	17	36	40	74	26
1960	215	+ 11.4	14	37	42	94	28
1961	174	—19.1	13	34	31	72	24

TABLEAU 11 Nombre des étudiants de 1^{ère} année dans les facultés dentaires canadiennes—1952-61.

Année	Total		Faculté					
	No	Pourcentage des modifications	Dal.	McG.	Mtl	Tor.	Man.	Alta
1952-53	172	— 0.6	12	35	20	75	..	30
1953-54	194	+ 12.8	12	32	43	77	..	30
1954-55	211	+ 8.8	13	37	55	75	..	31
1955-56	199	— 5.7	12	35	51	74	..	27
1956-57	206	+ 3.5	12	34	52	78	..	30
1957-58	194	— 5.8	13	34	39	80	..	28
1958-59	250	+ 28.9	14	38	57	90	21	30
1959-60	279	+ 11.6	18	38	44	119	24	36
1960-61	268	— 4.0	13	38	33	111	27	46
1961-62	320	+ 19.4	18	39	60	120	33	50

TABLEAU 12 Modifications dans les inscriptions de 1941 à 1951 et de 1951 à 1961.

Faculté	Pourcentage du changement					
	Tous les étudiants		Diplômés		1 ^{ère} année	
	Depuis 1941 %	Depuis 1951 %	Depuis 1941 %	Depuis 1951 %	Depuis 1941 %	Depuis 1951 %
Dalhousie	+ 140.0	+ 22.4	+ 85.7	+ 8.3	SR	+ 50.0
McGill	+ 127.9	— 4.1	+ 88.9	— 8.1	SR	+ 5.4
Montréal	+ 45.8	+ 22.9	+ 121.4	— 55.1	SR	+ 275.0
Toronto	+ 54.9	+ 43.0	+ 60.0	— 52.6	SR	+ 51.9
Alberta	+ 220.4	+ 29.8	+ 84.6	— 4.0	SR	+ 72.4
Total	+ 144.7	+ 39.3	+ 79.4	— 41.0	SR	+ 85.0

TABLEAU 13 Disponibilités des classes sous-gra-
duées, facultés dentaires canadiennes—1961-62.

Faculté	Disponibilités
Dalhousie	25
McGill	40
Montréal	60
Toronto	125
Manitoba	33
Alberta	55
Total	338

TABLEAU 14 Etudiants ayant déjà diplôme admis dans les facultés dentaires canadiennes — 1961-62.

Pays d'où l'étudiant a obtenu son diplôme	Dal.	McG.	Mtl	Tor.	Man.	Alta
Argentine						1
Australie	1			1		
Haïti				1		
Indes				1		
Iran					1	
Etats-Unis		1				
Angleterre	1			6		1
Europe		1	2	7	5	
Total	2	2	2	16	6	2

TABLEAU 15 Formation prédentaire des étudiants inscrits dans les facultés dentaires canadiennes — 1961-62.

Faculté	Années				Diplôme canadien		Diplôme étranger	
	1	2	3	4	Baccalauréat	Autre	Baccalauréat	Autre
Dalhousie	..	12	11	10	23	..	2	2
McGill	..	23	28	16	44	..	24	4
Montréal	..	..	..	..	168	..	..	4
Toronto	335	15	6	1	32	16	2	22
Manitoba	39	18	6	2	21	3	..	6
Alberta	77	37	11	3	27	..	1	1
Total	451	105	62	32	315	19	29	39
Pourcentage du total des sous-gradués	42.8	10.0	5.9	3.0	14.0	17.8	2.7	3.8

TABLEAU 16 Diplômés possédant baccalauréat avant études dentaires dans facultés canadiennes, 1961.

Faculté	Total des diplômés	Diplômés ayant baccalauréat	Pourcentage
Dalhousie	13	3	23.1
McGill	34	25	73.5
Montréal	31	30	96.8
Toronto	72	17	23.6
Alberta	24	..	..
Total	174	75	43.1

TABLEAU 17 Endroits de résidence des étudiants dentaires au Canada — 1961-62.

Total		Faculté							
Résidence	No	Pourcentage	Dal.	McG.	MtH	Tor.	Man.	Alta	Américains
T.-N.	8	.8	7			1			
I.-P.-E.	2	.2	2						
N.-E.	20	2.0	19	1					
N.-B.	14	1.5	12		2				
Qué.	226	23.1	2	62	157	3	2		
Ont.	419	42.9	2	7	3	395	2	1	9
Man.	79	8.1	1	1		3	71	1	2
Sask.	48	5.0		3	1	2	12	29	1
Alta	89	9.1						86	3
C.-B.	71	7.3	2	7		6	6	36	14
Canada	976	100.0	47	81	163	410	93	153	29

TABLEAU 18 Proportion du nombre des étudiants en rapport avec la population de leur province d'origine — 1957-1961.

Province	1957-58	1958-59	1959-60	1960-61	1961-62
Terre-Neuve	1/42600	1/39818	1/49889	1/57375	1/58625
Ile-du-Prince-Edouard	1/19800	1/50000	1/102000		1/52500
Nouvelle-Ecosse	1/33429	1/37368	1/37684	1/42529	1/36600
Nouveau-Brunswick	1/24565	1/23080	1/28095	1/35294	1/43714
Québec	1/22338	1/23147	1/23469	1/25530	1/23084
Ontario	1/18194	1/19343	1/16533	1/17056	1/14816
Manitoba	1/34400	1/24857	1/18830	1/16345	1/11544
Saskatchewan	1/25853	1/22200	1/18792	1/18200	1/19125
Alberta	1/19016	1/18197	1/18014	1/18594	1/14854
Colombie britannique	1/24783	1/23754	1/25323	1/25903	1/23042
Canada	1/21799	1/22026	1/20544	1/21334	1/18615

TABLEAU 19 Nombre des étudiants dentaires au Canada par 100,000 de population, par province — 1957-1961.

Province	1957-58	1958-59	1959-60	1960-61	1961-62
Terre-Neuve	2.3	2.5	2.0	1.7	1.7
Ile-du-Prince-Edouard	5.1	2.0	1.0	..	1.9
Nouvelle-Ecosse	3.0	2.7	2.7	2.4	2.7
Nouveau-Brunswick	4.1	4.3	3.6	2.8	2.3
Québec	4.5	4.3	4.3	3.9	4.3
Ontario	5.5	5.2	6.0	5.9	6.7
Manitoba	2.9	4.0	5.3	6.1	8.7
Saskatchewan	3.9	4.5	5.3	5.5	5.2
Alberta	5.3	5.5	5.6	5.4	6.7
Colombie britannique	4.0	4.2	3.9	3.9	4.3
Canada	4.6	4.5	4.9	4.7	5.4

TABLEAU 20 Endroits de résidence des étudiants venant d'ailleurs que de la province où la faculté dentaire est située — 1961-62.

Résidence	Toutes les facultés	Faculté					
		Dal.	McG.	Mtl	Tor.	Man.	Alta
Autres provinces du Canada	157	28	19	6	15	22	67
Autres pays							
Etats-Unis	57	6	37	5	8		1
Angleterre	10	1	2		7		
Indes occidentales	13		12		1		
Hong Kong	5	2	2			1	
Bermudes	4	2	2				
Australie	2	1			1		
Guinée anglaise	2		2				
Ghana	2						2
Nigeria	1						1
Trinité	1	1					
Indes	1				1		
Singapour	1					1	
Haïti	1				1		
Europe	5		1	4			
Total, autres pays	105	13	58	9	19	2	4
Total	262	41	77	15	34	24	71
Pourcentage de tous ces étudiants dans les facultés							
Autres provinces du Canada	14.9	46.6	13.7	3.5	3.5	23.2	42.7
Autres pays	10.0	21.7	41.7	5.2	4.4	2.1	2.5
Total	24.9	68.3	55.4	8.7	7.9	25.3	45.2

TABLEAU 21 Endroits de résidence des hygiénistes et des auxiliaires dans les facultés dentaires canadiennes — 1961-1962.

Résidence	Total		Faculté		
	No	Pourcentage	Dalhousie	Toronto	Alberta
T.-N.	1	1.1	1		
I.-P.-E.	2	2.4		2	
N.-E.	5	5.9	5		
N.-B.	1	1.1	1		
Qué.	0				
Ont.	53	62.4	1	50	2
Man.	0				
Sask.	8	9.4		4	4
Alta	15	17.7		1	14
C.-B.	0				
Canada	85	100.0	8	57	20

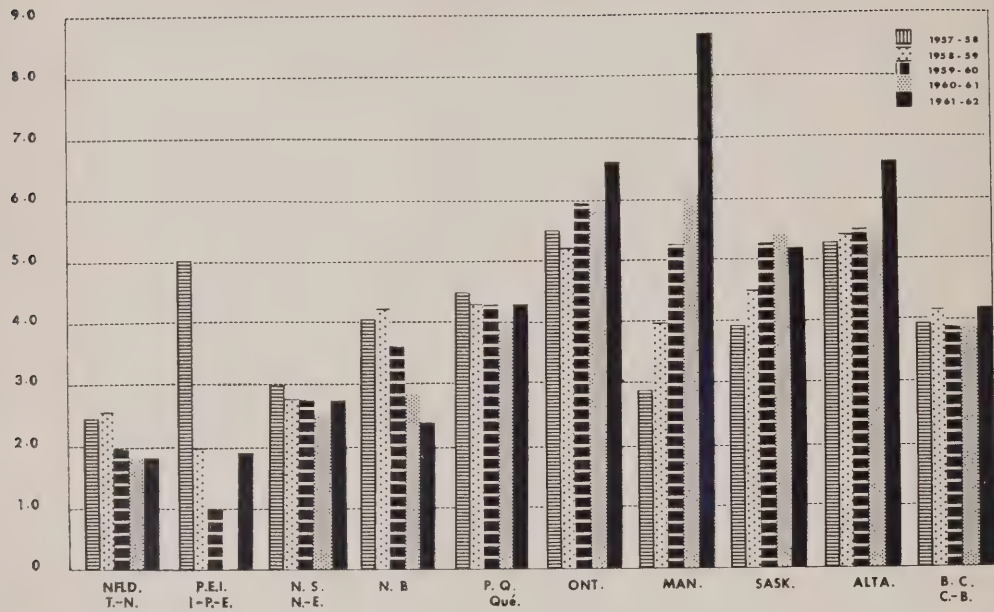


FIGURE 1 Nombre des étudiants dentaires par 100,000 de population, par province — 1957-1961.

TABLEAU 22 Dates pour demande, admission et graduation aux facultés dentaires canadiennes — 1961-62 et 1962-63.

Faculté	Demande 1 ^{ère} année 1962	Année			
		1961-62		1962-63	
		Admission	Graduation	Admission	Graduation
Dalhousie	31 mai	5 sept.	17 mai	4 sept.	16 mai
McGill	1 mars	6 sept.	27 mai	5 sept.	30 mai
Montréal	1 juillet	6 sept.	31 mai	5 sept.	31 mai
Toronto	1 sept.	20 sept.	29 mai	SR	SR
Manitoba	30 avril	11 sept.	24 mai	11 sept.	24 mai
Alberta	14 mai	5 sept.	1 juin	SR	SR

TABLEAU 23 Sources d'aide financière disponibles aux étudiants sous-gradués et gradués dans les facultés dentaires canadiennes (fonds du gouvernement non-compris).

Faculté	Sous-gradués		Gradués
	Bourses	Prêts	Bourses et/ou participation à l'enseignement
Dalhousie	oui	oui	non
McGill	oui	oui	non
Montréal	non	oui	non
Toronto	oui	oui	oui
Manitoba	oui	oui	oui
Alberta	oui	oui	non

TABLEAU 24 Estimés du coût des études dentaires dans les facultés canadiennes.

Items	Coût moyen \$	Faculté					
		Dal. \$	McG. \$	Mtl \$	Tor. \$	Man. \$	Alta \$
Prédentaire							
Frais de scolarité	572	810	SR	850	410	500	290
Volumes	92	100	SR	60	50	150	100
Matériel	33		SR		15	50	
Divers	75	150	SR	40	60	50	
Total des dépenses d'université	737	1,060	SR	950	535	750	390
Chambre et pension	1,164	1,170	SR	2,400	660	990	600
Total	1,901	2,230	SR	3,350	1,195	1,740	990
Dentaire							
Frais de scolarité	1,900	1,800	2,000	1,800	2,400	1,700	1,700
Instruments	1,680	1,100	2,000	1,100	490	1,000	1,458
Volumes		235		200	200	400	
Matériel		75		200	360	125	
Divers		400		100	240	400	
Total des dépenses d'université	3,580	3,610	4,000	3,400	3,690	3,625	3,158
Chambre et pension	3,043	2,875	3,000	5,000	2,640	2,340	2,400
Total	6,623	6,485	7,000	8,400	6,330	5,965	5,558
Total global	8,449	8,715	SR	11,750	7,525	7,705	6,548

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The Anticariogenic Effects of One and Two Applications of Stannous Fluoride on the Deciduous and Permanent Teeth of Children Age 6 and 7

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Clinical investigations by independent investigators have repeatedly demonstrated the effectiveness of a topically applied stannous fluoride solution upon the *permanent* teeth of children.¹⁻¹⁰

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The majority of these clinical studies have been carried out by Muhler and his co-workers and in most instances school children have received a single topical application of an 8 per cent aqueous solution of stannous fluoride. In one study adults received a topical application of a 10 per cent solution of stannous fluoride.¹¹ A further study by Muhler has demonstrated that this measure reduces significantly and also arrests the number and severity of dental carious lesions of

children residing all their lives in an area with the water supply artificially fluoridated at the optimum concentration.¹² An interesting and promising study by Rothhaar, a paedodontist, demonstrates that the single topical application of an 8 per cent stannous fluoride solution is a practical and worthwhile preventive measure to obtain effective anticariogenic results among child patients, when utilized as a routine office procedure.¹³

The results of a study of the effectiveness of a 4 per cent stannous fluoride solution upon the *deciduous* teeth have been reported by McDonald and Muhler.¹⁴ A Canadian study in Toronto, Ontario was described by Compton et al in 1959 and showed the effectiveness of a single application of 8 per cent stannous fluoride upon the deciduous teeth of preschool children.¹⁵

Also in 1959 it was reported¹⁶ that two applications of an 8 per cent aqueous stannous fluoride solution on two successive days had produced over a one-year period a reduction of caries increment of 100 per cent as noted by the DMF(T) index or 78.2 per cent as noted by the DMF(S) index.

The following clinical study was undertaken to evaluate and compare the anticariogenic effect of one and of two applications of an 8 per cent aqueous solution of stannous fluoride upon the deciduous teeth and first permanent molars of school children 6 and 7 years of age.

METHOD OF STUDY

Initially included within this study were 417 Grade 1 pupils of the Greater Victoria School District. These students were from schools representing all economic levels and geographic areas in Greater Victoria. Both sexes were included in approximately equal numbers. Subjects were those who had been reported as not requiring or as having completed treatment for dental caries by their family dentist or by a school dental

officer, or for whom all gross carious lesions had been treated. Less than 1 per cent of potential subjects were eliminated because of parental failure to authorize participation of the child in the study. Children available for the study were allocated to the control or one of the two experimental groups by means of the application of random numbers.

Every child received a thorough visual and tactile examination with the aid of compressed air, utilizing No. 5 plane mirrors, No. 5 explorers and standardized artificial lighting. Each examination (and subsequent prophylaxis and topical application) was carried out by one of the authors (W.A.T.S.). Recorded were def teeth and surfaces and DMF teeth and surfaces where applicable. No special instructions regarding oral hygiene care were given, although all children were encouraged to brush their teeth after each meal. No specific recommendation was made as to the type of dentifrice to be utilized.

At the same appointment as the examination, each subject of the control and of the two experimental groups received a complete prophylaxis of all coronal surfaces. A paste consisting only of fine pumice powder and glycerine was used. Careful interproximal sandpaper stripping and a thorough rinsing of the mouth with water followed. Subjects allocated to the control group then received a topical application of the placebo of distilled water, while subjects of both experimental groups received a topical application of an 8 per cent aqueous solution of stannous fluoride. All applications were made immediately following the prophylaxis and interproximal stripping, and to an isolated and dried field as recommended by Muhler.¹⁰ On the subsequent day, with no further prophylaxis, each child of the control and of the first experimental group received a topical application of the placebo of distilled water, and subjects of the second experimental group a second application of stannous fluoride solution.¹⁶

TABLE 1 Comparison of certain attributes of the control and experimental groups as at the initial examinations. Victoria stannous fluoride study, 1959-61.

Item	Control group	Experimental groups	
		Receiving one application of SnF ₂	Receiving two applications of SnF ₂
Number of subjects	126	131	103
Average age (years, months)			
Males	6 y. 7.0 m.	6 y. 7.4 m.	6 y. 7.7 m.
Females	6 y. 6.9 m.	6 y. 7.0 m.	6 y. 7.3 m.
All subjects	6 y. 7.0 m.	6 y. 7.2 m.	6 y. 7.5 m.
Percentage of males	55.6	56.5	51.5
Percentage of females	44.4	43.5	48.5
Average def* teeth per child	4.3	3.9	4.4
Average def surfaces per child	8.1	6.7	7.6
Average DMF† teeth per child	0.5	0.6	0.6
Average DMF surfaces per child	0.6	0.7	0.7
Average number of teeth and surfaces at risk‡ per person at outset			
Deciduous:			
Incisor and cuspid teeth	6.0	5.8	5.6
Incisor and cuspid surfaces	25.0	24.2	23.3
Molar teeth	4.1	4.1	3.7
Molar surfaces	32.0	32.3	31.9
Permanent:			
Incisor and cuspid teeth	2.2	2.6	2.7
Incisor and cuspid surfaces	8.8	10.6	10.6
Molar teeth	1.8	1.8	2.0
Molar surfaces	11.0	10.9	12.0

*Decayed, extracted, filled—deciduous teeth.

†Decayed, Missing, Filled—permanent teeth.

‡No previous caries experience.

On each occasion the stannous fluoride solution was freshly prepared immediately prior to its application. This and the placebo solutions were presented to the dentist in identical containers. Their identity was recorded in code on the dental chart of the subject by the dental assistant. The dentist was not informed as to the identity of the solution provided.

Precisely one year subsequent to the initial examination and applications, each available subject of the control and experimental groups was re-examined by the same dental officer who had carried out the initial examination.

Of the original 417 subjects, 360 were available at the end of the one-year study

period. Re-examinations were undertaken without the examining dentist being aware of the status of the subject (control or experimental) and without reference to the original chart. However, before the patient was dismissed, the dental assistant compared the two charts and drew to the attention of the examining dentist any tooth or surface regarding which his diagnosis at that time differed from that at the original examination, but without disclosing the nature of the change. The dental officer thereupon rechecked his present diagnosis of all such teeth.

For the final tabulation and analysis of results of this study, only the information relating to those teeth at risk during the entire study period was utilized.

DISCUSSION OF DATA

Table 1 compares the number of subjects, average age, proportion of males and females, and the average def and DMF rates for the control and experimental groups as at the commencement of the study period and in respect only of subjects retained throughout.

The average ages of the three groups varied only to an extremely slight degree. The distributions of males and females in the control and first experimental groups are similar, but both are slightly different from that in the second experimental group. However, the differences are not considered to be of such a degree as likely to be a factor of significance in the interpretation of the findings of this study.

With regard to previous dental caries experience, subjects who subsequently received one application of stannous fluoride showed a somewhat lower initial average number of def teeth and surfaces than the other two groups. However, it was

considered doubtful that these differences would be sufficient to influence the final results. This hypothesis was later proved valid. The average number of DMF teeth and surfaces per child was substantially the same for all three groups.

The average number of deciduous and permanent non-carious teeth and surfaces per person which were at risk at the outset and throughout the study period is shown for each of the three groups.

Table 2 demonstrates the number of deciduous and permanent teeth and tooth surfaces of the control and experimental groups which were at risk from the commencement to the termination of the study and the total df/DF increment during the twelve-month period.

The deciduous teeth of the subjects receiving one topical application experienced dental caries during the study period at a rate 45.2 per cent less than that of the control group (Table 3). However, deciduous incisors and cuspids benefited by a caries increment which was 73.3 per cent lower than that of the con-

TABLE 2 Comparison of teeth and surfaces at risk initially and dental caries increment after 12 months among control and experimental groups. Victoria stannous fluoride study, 1959-61.

Item		Number of teeth and surfaces at risk			Total caries increment after 12 months		
		Control group	Group receiving one application of SnF ₂	Group receiving two applications of SnF ₂	Control group	Group receiving one application of SnF ₂	Group receiving two applications of SnF ₂
Deciduous Teeth	Incisors and cuspids	750	762	572	19	5	3
	Molars	511	539	384	112	70	66
	Total	1261	1301	956	131	75	69
Deciduous Surfaces	Incisors and cuspids	3155	3168	2397	36	9	3
	Molars	4037	4234	3283	279	179	144
	Total	7192	7402	5680	315	188	147
Permanent Teeth	Incisors and cuspids	277	344	273	0	0	0
	Molars	232	233	202	86	32	49
	Total	509	577	475	86	32	49
Permanent Surfaces	Incisors and cuspids	1108	1382	1092	0	0	0
	Molars	1390	1433	1231	120	55	69
	Total	2498	2815	2323	120	55	69

TABLE 3 Comparison of Mean Caries Increments of Control and Experimental Groups at the end of one year. Victoria stannous fluoride study, 1959-61.

Item	Mean caries increment per person in control group		Group receiving one application of SnF ₂			Group receiving two applications of SnF ₂				
			Mean caries increment per person	t. test*	Per cent reduction in mean increment compared to controls	Mean caries increment per person	t. test*	Per cent reduction in mean increment compared to controls		
Deciduous teeth	S.E.		S.E.			S.E.				
Incisors and cuspids	0.15	0.05	0.04	0.02	2.3	73.3	0.03	0.02	1.6	80.0
Molars	0.89	0.11	0.53	0.09	0.8	40.4	0.64	0.10	5.3	28.1
Total	1.04	0.14	0.57	0.10	0.4	45.2	0.67	0.10	1.9	35.6
Deciduous surfaces										
Incisors and cuspids	0.29	0.08	0.07	0.03	0.6	75.9	0.03	0.02	0.1	89.7
Molars	2.21	0.24	1.37	0.18	0.2	38.0	1.40	0.20	0.4	36.7
Total	2.50	0.28	1.44	0.19	0.1	42.4	1.43	0.20	0.1	42.8
Permanent teeth										
Incisors and cuspids	0	—	0	—	—	—	0	—	—	—
Molars	0.68	0.10	0.24	0.06	0.0†	64.7	0.48	0.09	5.5	29.4
Total	0.68	0.10	0.24	0.06	0.0†	64.7	0.48	0.09	5.5	29.4
Permanent surfaces										
Incisors and cuspids	0	—	0	—	—	—	0	—	—	—
Molars	0.95	0.13	0.42	0.11	0.1	55.8	0.67	0.12	6.2	29.5
Total	0.95	0.13	0.42	0.11	0.1	55.8	0.67	0.12	6.2	29.5

*Percentage probability of there occurring by chance a difference as great as or greater than that observed between mean caries increments of the control group and the experimental groups.

†Less than 0.05 per cent.

trol group but the deciduous molars benefited to a lesser degree, namely 40.4 per cent. All these differences are statistically significant. The deciduous teeth of the group receiving two topical applications on successive days appeared to benefit to a slightly lesser degree, 35.6 per cent, but again the incisors and cuspids benefited to a greater degree (80.0 per cent) than the molars (28.1 per cent) although the latter difference was not significant at the 5 per cent level of confidence.

The surfaces of the deciduous teeth showed a similar pattern of caries experience during the study period. The group receiving one application experienced a caries increment 42.4 per cent less than that of the control group, comprising a 75.9 per cent reduction for surfaces of deciduous incisors and cuspids and a 38.0 per cent reduction for surfaces of deciduous molars. The group receiving two applications during the study period experienced similar dental caries increments for the surfaces of the deciduous teeth,

the increment for all surfaces being 42.8 per cent less than the control group. For surfaces of incisors and cuspids the increment was 89.7 per cent less than that of the controls and 36.7 per cent less for the surfaces of deciduous molars. All these differences are highly significant.

The permanent molar teeth of the group receiving one application during the twelve-month study period experienced an increment of dental caries 64.7 per cent less than that experienced by the control group, and for the surfaces of permanent molar teeth the increment was 55.8 per cent less than the control group. These differences are statistically significant. However, for the group receiving two applications the decrease in caries increment for permanent teeth as compared to the controls was only 29.4 per cent and for surfaces of permanent teeth, 29.5 per cent. These results are not significant at the 5 per cent level of confidence. Only one subject experienced dental caries of the permanent incisors before and none during the study period.

In order to determine whether variations in the proportions of subjects with 0, 1, 2, 3, etc. carious or filled lesions initially in the control and experimental

groups were sufficient to affect the subsequent caries experience of the group, a standardizing procedure was carried out. For example, the caries increment rates for subjects in the control group with 0, 1, 2, 3, etc. carious lesions initially were calculated. These rates were then applied to the number of subjects in the standard group with the corresponding number of carious lesions initially. The sum of these results was then a standardized caries increment rate for the control group. This was done for each of the control and experimental groups and for each tooth or surface type. The caries increment rates thereby calculated showed little variation from those for the unstandardized group. It was thus indicated that the variations in initial caries rates were of little influence in determining the subsequent caries increment rates.

However, it will be noted that the children in this survey were selected on the basis of being reported as not needing further treatment for dental caries. Furthermore, it is known from dental surveys conducted throughout British Columbia that Victoria children have a significantly lower DMF rate than children of any other region of this province. If

TABLE 4 Number of subjects of control and experimental groups, experiencing new carious surfaces during the study period, Victoria stannous fluoride study, 1959-61.

Number of new carious surfaces during study period	Control group			Experimental groups					
				Receiving one application of SnF ₂			Receiving two applications of SnF ₂		
	Number	Per cent	Cumulative per cent	Number	Per cent	Cumulative per cent	Number	Per cent	Cumulative per cent
0	37	29.3	29.3	65	49.6	49.6	48	46.6	46.6
1	20	15.8	45.1	19	14.5	64.1	20	19.4	66.0
2	18	14.3	59.4	17	12.9	77.0	15	14.6	80.6
3	22	17.5	76.9	17	12.9	89.9	6	5.9	86.5
4	8	6.3	83.2	3	2.2	92.1	5	4.9	91.4
5 - 9	17	13.6	96.8	8	6.3	98.4	9	8.6	100
10 - 14	3	2.4	99.2	2	1.6	100	—	—	—
25	1	0.8	100	—	—	—	—	—	—
Total	126	100	—	131	100	—	103	100	—

the reduction in caries increment after treatment with stannous fluoride (measured by teeth or surfaces) is the same for various levels of caries prevalence and dental care, then the proportionate reduction in caries increment for the Victoria study group would be higher than that which would be apparent for another group with a higher initial caries experience.

Table 4 shows the number of new carious surfaces of deciduous and permanent teeth which developed during the study period within the three groups. Almost one-half of the groups receiving one or two applications of stannous fluoride showed no caries increment during the one-year study period compared to only 29 per cent in the control group. Also, only 23 per cent of the group receiving

one application of stannous fluoride and 19 per cent of the group receiving two applications developed three or more carious surfaces compared to 41 per cent of the control group.

The data in Table 5 show that within the control group at the commencement of the study there were 20 subjects caries-free (i.e. with no previous caries experience) but of these, 12 subjects (60 per cent) developed caries in deciduous and/or permanent teeth during the study period, with a total of 34 decayed teeth and 53 decayed tooth surfaces. Within the group receiving one application of stannous fluoride 21 subjects were initially caries-free and of these, 8 subjects (38 per cent) subsequently developed caries (14 teeth and 19 tooth surfaces). In the group receiving two applications of stannous fluoride 12 subjects were initially

TABLE 5 Caries increment during the study period of subjects caries-free* at the initial examination. Victoria stannous fluoride study, 1959-61.

Caries increment during study period	Teeth			Surfaces		
	Control group	Experimental groups		Control group	Experimental groups	
		Receiving one application of SnF ₂	Receiving two applications of SnF ₂		Receiving one application of SnF ₂	Receiving two applications of SnF ₂
0	8	13	9	8	13	9
1	7	5	1	6	4	1
2	1	2	1	1	3	—
3	—	—	—	—	—	—
4	3	—	1	1	—	1
5	—	1	—	2	—	—
6	—	—	—	1	—	—
7	—	—	—	—	—	—
8	—	—	—	—	—	—
9	—	—	—	—	1	1
10	—	—	—	—	—	—
11	—	—	—	—	—	—
12	—	—	—	—	—	—
13	1	—	—	—	—	—
..	—	—	—	—	—	—
25	—	—	—	1	—	—
Total caries-free* initially	20	21	12	20	21	12
Caries increment rate per subject	4.25	1.08	0.78	6.63	1.46	1.56

*No previous caries experience.

caries-free, and of these, 3 subjects (25 per cent) subsequently developed caries (7 teeth and 14 tooth surfaces). The differences in the proportion of subjects remaining caries-free throughout the study period as between the control group and the group receiving one application and between the controls and the subjects receiving two applications are both statistically significant. However, the difference between the proportions subsequently developing caries in the two experimental groups (38 per cent and 25 per cent) is not statistically significant.

For the subjects of the control group initially caries-free the increment of carious tooth surfaces was 6.63, whereas for subjects of the group receiving one application the increment was 1.46 tooth surfaces, i.e. a reduction of 78 per cent. A rather similar reduction (76 per cent) in the caries increment rate also pertains between subjects of the control group initially caries-free and subjects receiving two applications of stannous fluoride.

SUMMARY

During the twelve-month study period, of the original 417 Grade 1 participants, 360 were available for re-examination; 126 in the control group, 131 in the group which received one application of stannous fluoride, and 103 in the group which received two applications.

After 12 months, the control group had a mean caries increment per person of 1.04 df teeth as compared to 0.57 df teeth for the group which received one application of stannous fluoride, i.e. a reduction of 45.2 per cent. The group which received two applications of stannous fluoride had a mean caries increment of 0.67 df teeth or a reduction of 35.6 per cent when compared with the control group.

During the same period the control group had a mean caries increment per person of 2.5 tooth surfaces. The group which had received one application of stannous fluoride had a mean caries incre-

ment of 1.44 df tooth surfaces, i.e. a reduction of 42.4 per cent. The group which received two applications had a mean caries increment of 1.43 tooth surfaces or a reduction of 42.8 per cent.

It was observed that the caries attack rate for deciduous incisor and cuspid teeth was reduced by a greater degree than that for the deciduous molar teeth.

In regard to permanent teeth, the control group experienced a DF tooth caries increment rate of 0.68 teeth and the group which received one application a rate of 0.24 teeth per person or a reduction of 64.7 per cent. The DF surface index of the control group increased by 0.95 as compared to 0.42 for the group receiving one application, i.e. a reduction of 55.8 per cent.

Whereas 50 per cent of the subjects receiving one application of stannous fluoride remained caries-free during the study period, and 47 per cent of the subjects receiving two applications, only 29 per cent of the control group remained caries-free.

Of the subjects of the control group who were caries-free (i.e. with no previous caries experience) at the commencement of the study 60 per cent developed caries during the study period, whereas of the group who received one application of stannous fluoride such subjects were only 38 per cent, and for the group who received two applications only 25 per cent. The difference between the latter two percentages is not statistically significant.

This study confirms the previous observation of Muhler¹⁷ (published after the commencement of this study) that the topical application of an 8 per cent stannous fluoride solution on two successive days produces no better results than the single application technique.

CONCLUSION

This study has shown that a topically applied 8 per cent stannous fluoride aqueous solution to the deciduous and perma-

nent teeth of 6-7 year old children has a significantly beneficial anticariogenic effect when evaluated one year later and that no further effectiveness results from a second application on a successive day.

RÉSUMÉ

Les auteurs ont fait des recherches pour constater les effets anti-carie d'une ou de deux applications d'une solution à 8% de fluorure d'étain sur les dents primaires et les premières molaires permanentes d'enfants de six et de sept ans de Victoria, Colombie britannique.

Cette enquête a montré, d'une façon significative, un an plus tard, un effet anti-carie favorable; elle a de plus confirmé l'observation que Muhler faisait récemment (et publié après le début de l'expérience présente) que l'application topique d'une solution à 8% de fluorure d'étain, deux jours de suite, ne donne pas de meilleurs résultats que l'application faite une seule fois.

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The Dangers of Kissing • The following is an extract from a dentist's letter to the Scottish (Dental) Estimates Board: "I wish to refer to my claim for an additional fee of eighteen shillings in respect of (a silicate filling in a patient's tooth). The patient, who recently announced his betrothal, was the other evening overcome by an attack of overwhelming passion. His fiancée was seated in an armchair; the patient approached with a view to osculatory embrace, placed his hand on the arm of the chair and unfortunately slipped. Notwithstanding this, the desired contact was effectively established, but with such unforeseen violence that the lady's upper incisors removed a large flake of silicate from my restoration. While I feel the Board will agree that such procedure falls within the bounds of normal usage, it is my opinion that it cannot be held that violent heterosexual dental articulation constitutes fair wear and tear. An additional fee of eighteen shillings is therefore sought for replacement of the damaged filling."

Malocclusion in Public Health

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Occlusion in dentistry generally refers to the relationship of the teeth in the maxillary and mandibular dental arches when the jaws are closed. Malocclusion is strictly a dental term and denotes any deviation from the usual form of occlusion. The term "malocclusion" poses a semantic problem since it is not clearly defined for epidemiological studies. There are exactly nine different malpositions which a single tooth can assume. With twenty deciduous teeth and thirty-two permanent teeth, it is easy to realize the difficulty in planning systematic epidemiological studies. Massler and Frankel¹ have carried out one of the most systematic epidemiological studies of maloccluded teeth. The sample group was made up of 2,758 children, aged 14-18, with equal proportions of boys and girls. They found that 80 per cent had ten or more malposed teeth requiring corrections, 18 per cent had less than ten malposed teeth which did not require correction, and 3 per cent had ideal occlusions.

Inseparable from the term "malocclusion" is the term "dentofacial deformity" which denotes all deviations from the desired pattern of development of the dentition and bones of the jaws and face. The causes, times of action, and tissues affected which produce malocclusion and dentofacial deformity are summarized in Table 1.

Malocclusion therefore, may involve individual teeth, the dental arches, the alveolar processes, the soft tissues, the neuro-muscular system, the supporting jaws or all or any combination of these.

Salzmänn⁴ lists the following aims of preventive prophylactic orthodontics:

1. Promote proper masticatory function.
2. Reduce susceptibility to, and incidence of, dental caries.
3. Prevent abnormalities of facial appearance of dental origin.
4. Obviate extensive orthodontic treatment at a later age.
5. Prevent and eliminate abnormal respiratory function and its sequelae, as they affect dental development.
6. Obviate development of periodontal lesions.
7. Prevent development of improper mental attitude due to dentofacial abnormalities.
8. Aid in speech training.

The practice of prophylactic orthodontics includes the prevention, interception, and treatment of incipient conditions which if untreated would require extensive orthodontic treatment at a later stage of development.

Since the dental caries problem is so serious and extensive, the dental profession and public health administrators have had little time or opportunity to set up control programs directly concerned with periodontal diseases and malocclusion. However, procedures presently used in the prevention of dental decay also reduce the incidence of periodontal diseases and malocclusion.

Pelton⁵ states that, according to Sinai, a public health problem is:

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TABLE 1 Causes, times of action and tissues involved in malocclusion and dento-facial deformity.*

Predisposing or exciting causes	Acting at these times	Primarily or secondarily on these tissues	May produce these results singly or in combination
1. Hereditary	1. Prenatally or postnatally	1. Muscles of the face and jaws	1. Malocclusion
2. Developmental causes of unknown origin	2. Continuously or intermittently	2. Bones of the jaw	2. Malfunction
3. Trauma	3. At specific age levels	3. Teeth	3. Osseous dysplasia
4. Physical agents		4. Soft tissues, excluding muscle	
5. Habits		5. Temporomandibular joint	
6. Systemic disease			
7. Malnutrition			

*From Moyers² as elaborated by Dockrell.³

1. A condition or situation which is a widespread actual or potential cause of morbidity or mortality.

2. About this situation is a body of knowledge which, if applied, would prevent, ameliorate, or cure this condition or situation.

3. This body of knowledge is not being applied.

Pelton⁵ further points out that the weak point concerning malocclusion has been that "the body of knowledge" is largely clinical and may be compared with filling teeth to control the dental caries problem.

There is one kind of orthodontic public health service which is well organized in some parts of Canada and one which should be drawn to the attention of health units. That is the habilitation of the child born with a cleft lip and palate. Studies have shown that one of every 800-900 infants is born with a cleft lip and palate.^{6,7} This problem is best handled by teams of experts located in large centres of population. Cleft palate teams include the plastic surgeon, paediatrician, psychologist, paedodontist, orthodontist, speech therapist, and social worker.

From 1949 to 1958, 83,471 children were born in Edmonton which would suggest an estimated one-hundred children with this deformity under age 10.

To this date, there are no cleft lip and palate teams organized in Alberta. The recording of cleft lip and palate on birth records in all hospitals should be encouraged as a means of estimating the need. These unfortunate children should be assured of the best medical and dental care.

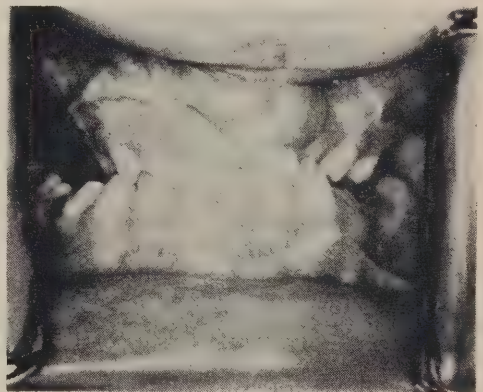


FIGURE 1 Anterior view of the deciduous dentition in a child with a complete unilateral cleft of the lip, alveolar process and palate. Note the poor occlusal relationship in the posterior region as a result of the maxillary collapse.



FIGURE 2 Occlusal view of the maxilla. The alveolar process on the side of the cleft has collapsed palatally and seriously affected the occlusion.

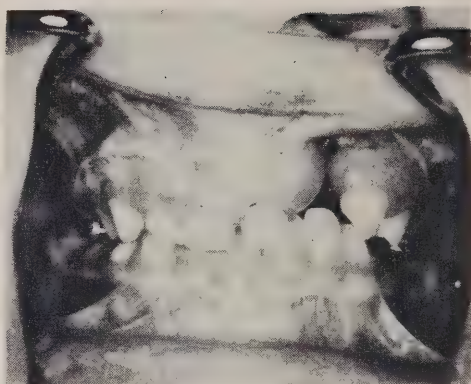


FIGURE 3 Anterior view of same child shown in Figure 1. After the maxilla has been expanded to normal form there is also an improvement in function and facial aesthetics.

It is impossible to treat cleft palate children orthodontically once they lose their deciduous teeth prematurely. Figures 1 and 2 reveal the type of maxillary deformity and malocclusion associated with a complete unilateral cleft of the lip, alveolar process and palate. Figures 3

and 4 demonstrate the first phase of orthodontic treatment whereby the maxillary dental arch is restored to normal form and function.

Scores of clinical surveys have been undertaken to estimate the incidence and types of malocclusion related to various age groups. Table 2 summarizes some of the studies on the deciduous dentition and reveals that a large percentage of children have malocclusion by age six. From Table 3 the prevalence of malocclusion appears to be greater in the transitional and permanent dentitions. Considerable variation is apparent in the findings, probably for several reasons, such as different countries with varying standards of dental health, dissimilar socio-economic samples of children, and differences in criteria and recording methods. Gardiner¹⁶ and Newman¹⁷ estimated that 39.8 and 32.8 per cent respectively of the malocclusions in their surveys were preventable.

Seipel²⁷ differentiates between preventive measures which are orthodontic, genetic or medical in character.

Loss of space, caused by carious mutilation of tooth tissue or by premature loss of deciduous teeth, and deleterious oral

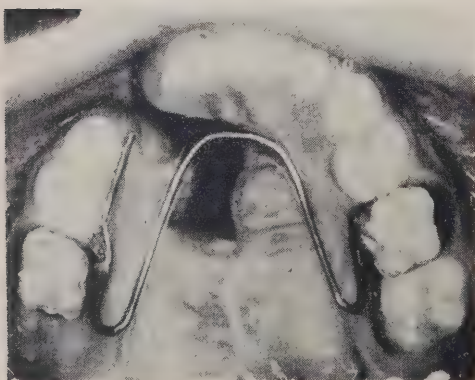


FIGURE 4 Occlusal view showing the maxillary expansion arch still in place. Note the normal ovoid-shaped dental arch. The cleft which has been opened during the expansion gradually closes from proliferation of the epithelium along the edges of the cleft.

TABLE 2 Studies of the prevalence of malocclusion and antero-posterior jaw relationship according to molar occlusion in the deciduous dentition.

Investigator	Country	Number	Age	Class I %	Class II %	Class III %	Total malocclusions %
Korkhaus ⁹ 1928	Germany	643	6	33.3	12.8	4.8	43.1
McCall ¹⁰ 1944	U.S.A.	152	2-6	26.9	8.5	2.6	38.0
Brandhorst ¹¹ 1945	U.S.A.	5,563	5-6	12.4	3.0	1.5	17.0
Barrow and White ¹² 1952	U.S.A.	51	5	33	18	9.0	60.0
Humphreys and Leighton ^{13*} 1950	England	2,711	2-5½	—	25.1	1.5	—
Hertel ¹⁴ 1955	Italy	3,203	5.14	51.6	15.6	4.3	71.4
Popovich ¹⁵ 1955	Canada	281	3.4	23.5	22.4	0	45.9
Popovich ¹⁵ 1955	Canada	104	6	16.3	17.3	0.9	34.5

* "A study on the Incidence of Class 2 Malocclusion."

habits are probably the commonest environmental causes of malocclusion. The orthodontic prevention of these conditions will be described in greater detail.

SPACE LOSS

Crowding in the posterior segments of the dental arches may be the result of an abnormal reduction in the dental arch length. This is often referred to as space loss. It is caused by dental caries and premature loss of deciduous teeth, particularly deciduous molars. Dental caries brings about destruction of the contact points between adjacent teeth resulting in space loss (Figure 5). Unless treated, the deciduous teeth have to be removed resulting in even greater space loss (Figure 6). For example, space loss occurs when the first permanent molar drifts anteriorly within the alveolar process and encroaches on the space originally intended for the bicuspid, so that crowding or impaction of the bicuspid result (Figure 7). There may also occur a concomi-

tant increase in the overbite (vertical overlapping of the teeth). Surveys on the incidence of malocclusion resulting from premature extractions and caries are presented in Tables 4 and 5. It will be noted that Korkhaus,⁹ McCall¹⁰ (Table 4) and Popovich¹⁵ (Table 5) observed a low incidence of malocclusion from these

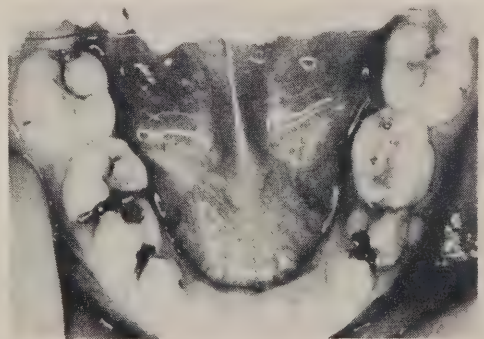


FIGURE 5 Occlusal view of a mandibular dental arch with severe dental caries and destruction of the contact points.

TABLE 3 Studies of the prevalence of malocclusion and antero-posterior jaw relationship according to molar occlusion in the transitional and permanent dentition.

Investigator	Country	No.	Age	Class I %	Class II %	Class III %	Total Malocclusion %	Preventable %
McCall								
1944	U.S.A.	623	7-11	47.0	11.0	2.0	60	—
Brandhorst ¹¹								
1945	U.S.A.	11,462	6-7	14.2	2.2	1.1	17.5	—
Brandhorst ¹¹								
1945	U.S.A.	10,231	7-8	25.0	4.9	1.3	31.2	—
Brandhorst ¹¹								
1945	U.S.A.	9,976	8-9	38.8	8.9	1.6	49.7	—
Brandhorst ¹¹								
1945	U.S.A.	9,878	9-10	41.6	10.3	1.8	53.9	—
Brandhorst ¹¹								
1945	U.S.A.	8,748	12-13	39.9	13.7	2.1	55.7	—
Gardiner ¹⁶								
1956	England	1,000	5-15	65.7	8.1	0.4	74.2	39.8
Newman ¹⁷								
1956	U.S.A.	3,355	6-14	38.2	13.2	0.5	51.9	32.8
Krogman ¹⁹								
1951	U.S.A.	586	6½-12½	28.0	24.4	1.7	54.1	—
Telle ²⁰								
1951	Norway	2,349	7-8	30.1	21.3	7.3	58.7	—
Goose ²²								
1957	England	2,956	7-15	24.8	16.1	2.9	43.8	—
Korkhaus ⁹								
1928	Germany	568	14	41.7	13.2	0.5	55.4	—
Goldstein and Stanton ¹⁸								
1936	U.S.A.	306	11	—	—	—	75.0	—
Brandhorst ¹¹								
1945	U.S.A.	2,810	17-18	60.3	8.1	2.8	71.2	—
Massler and Frankell ²								
1951	U.S.A.	2,758	14-18	"10 or more malposed teeth requiring correction"			80.0	—
Savara ²¹								
1955	U.S.A.	2,774	14-18	50.1	19.4	9.4	78.9	—
Popovich ¹⁵								
1955	Canada	92	10	22.7	30.4	1.1	54.2	—
Popovich ¹⁵								
1955	Canada	87	12	35.6	33.3	2.2	71.1	—

causes up to six years of age. This is probably because the first permanent molar does not erupt until age six and consequently anterior drifting would be minimal. On the other hand, Schachter²⁶ found a high incidence (68 per cent) of malocclusion related to premature loss of several deciduous molars in a 2-5 year group. Although there are considerable differences in the findings presented in Tables 4 and 5, most of the studies do support the hypothesis that

dental caries and premature loss is a very common cause of malocclusion. The best and logical approach to prevention is the adjustment of the fluoride content of drinking water to one p.p.m. of fluoride which reduces dental decay by 65 per cent.⁴⁶ Failing this, other less successful preventive methods include:

1. Topical application of stannous fluoride to the tooth surface. In Stock-

TABLE 4 Prevalence of malocclusion attributed to premature extraction of deciduous molars.

Author and year	Description of sample	Number	Age	Per cent with malocclusion	Country
Lyons ²⁴ 1924	Unselected group	5,000	5-12	65% of all with tooth loss with a malocclusion	U.S.A.
Korkhaus ⁹ 1928	Unselected group	643	6	1.4	Germany
Korkhaus ⁹ 1928	Unselected group	568	14	27.3	Germany
McCall ¹⁰ 1944	Unselected group	152	2-6	3.9	U.S.A.
McCall ¹⁰ 1944	Unselected group	623	7-11	12.0	U.S.A.
Gardiner ¹⁶ 1956	Unselected group	1,000	5-15	19.0	England
Rhobotham ²⁵ 1933	Unselected group	100	—	37.0	U.S.A.
Schachter ²⁶ 1943	All cases of premature loss	130	11-16	26.2	England
Schachter ²⁶ 1943	All cases with extensive losses (48 deciduous molars)	50	2-5	68.0	England
Seipel ²⁷	All cases of premature loss (examined about 10 years after extraction)	50	—	20.0	Sweden

TABLE 5 Frequency and aetiology of malocclusion by age as judged from the study of models only.

Age next birthday	Number examined	% having malocclusion*	Per cent malocclusion cases attributed to		
			Caries	Habits	Heredity†
3 and 4	281	45.9	2.0	73.0	25
6	104	34.5	17.1	54.3	28
8	125	51.7	31.0	43.1	25
10	92	54.2	28.2	22.0	40
12	87	71.1	32.6	26.0	41

Source: Popovich,¹⁵ Study No. 1

*Malocclusion described as models exhibiting overbite greater than 50 per cent of the crown, overjet greater than 3mm., arch crowding by more than 1mm. per quadrant, or cuspid-molar relation other than Class I.

†Malocclusion not attributed to any obvious environmental factor such as early loss of teeth, or habits.

holm this is provided for 70,000 school children.⁴⁵

2. Observance of sensible food habits.

3. Excellent oral hygiene by proper brushing of the teeth after ingestion of food.

4. Adequate dental care whereby the mesio-distal diameters of the deciduous molars are maintained by adequate restorative procedures.

5. Immediate insertion of space maintainers when deciduous molars are extracted prematurely (Figure 8).



FIGURE 6 Occlusal view of a mandibular dental arch. The second deciduous molars have been lost prematurely and the first permanent molars have encroached on the space for the second bicuspid.

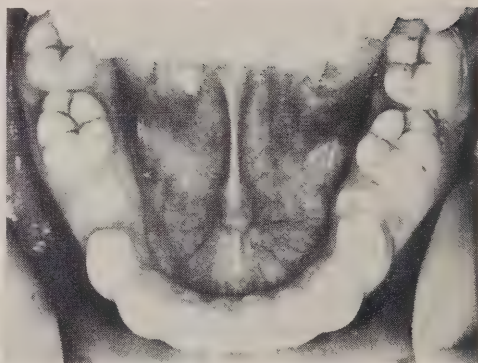


FIGURE 7 Occlusal view of a mandibular dental arch. The mandibular left second bicuspid is crowded lingually due to space loss resulting from premature loss of the second deciduous molar.

In cases where space has been lost, it can usually be regained by means of simple removable appliances (Figures 9, 10, 11). However, space regaining would not be considered prevention but rather interception of malocclusion.

ORAL HABITS

The most prevalent oral habits are thumb and finger sucking. Other habits include tongue and lip sucking, tongue thrusting, mouth breathing and nail biting.

Ruttle et al²⁹ studied the effects of prolonged finger and thumb sucking habits in 36 children with habits and compared the results to a non-habit control group of the same age. The following is a summary of the undesirable significant findings:

1. Maxillary arch form — increase in the tapered arches and decrease in the ovoid. Figure 13 is an example of a dental arch which is tapered.

2. Mandibular arch form—decrease in the ovoid and tapering arches and increase in the trapezoidal arches.

3. Malocclusions among the habit group



FIGURE 8 Occlusal view of a unilateral space maintainer used to retain the space originally occupied by the second deciduous molar.

were characterized by a maxillary dento-alveolar protrusion with shallow and open bite relationships of the anterior teeth. Figure 12 is an example of an open bite.

Table 5 shows the frequency of malocclusion judged to be caused by oral habits in 68 per cent of the children in the community of Burlington, Ontario.¹⁵ Table 6 is a summary of studies on the prevalence of thumb and finger sucking

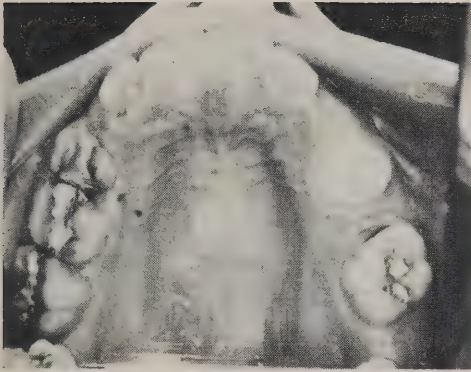


FIGURE 9 Occlusal view of space loss in maxillary left quadrant resulting from premature loss of the second deciduous molar.

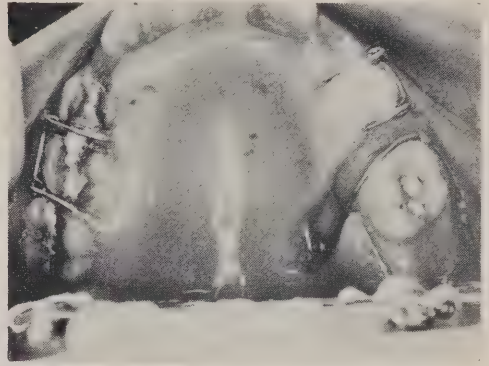


FIGURE 10 Occlusal view of a simple removable space regaining appliance.

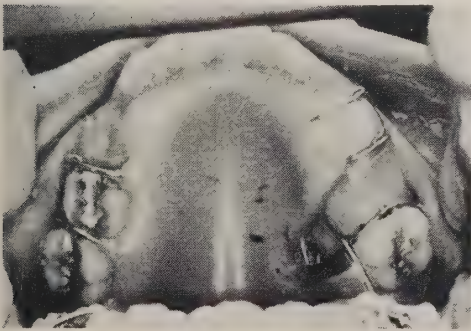


FIGURE 11 Occlusal view of the space regainer after the lost space has been regained.

and suggests that 20-25 per cent of children have a prolonged oral habit. Table 7 shows the prevalence of malocclusion in several studies on thumb and finger sucking children. In an unselected group of 1,000 children, Gardiner¹⁸ found 14 per cent to have a malocclusion associated with thumb or finger sucking. Kjellgren³⁴ found in a group of 1,000 children (thumb suckers excluded) that only 1.6 per cent had a malocclusion. Several other studies have verified that there is a direct relation between oral habits and malocclusion.

TABLE 6 Prevalence of thumb and finger sucking.

Author and year	Country	Number	Per cent with habit
Levy ³² 1928	U.S.A.	112	16.0
Johnson ³¹ 1939	U.S.A.	989	17.49
Bliss ³⁰ 1945	New Zealand	300	17.0
Humphrey and Leighton ¹³ 1950	England	1,000	27.5
Gardiner ¹⁶ 1956	England	1,000	27.2

The studies reported in Table 8 suggest a direct relationship between the prevalence of post-normal (Class II molar occlusion) malocclusion and thumb sucking.

*Prevention of Malocclusion
Resulting From Oral Habits*

Studies of 225 thumbsuckers at Northwestern University Dental School have revealed that the damage incurred during the first three years of life is subsequently usually corrected as a result of normal function of the musculature. After the age of four, self-correction becomes more doubtful. Studies on a large group of thumb suckers at the University of Michigan showed that approximately 15 per cent had enough deformity to require orthodontic treatment. Humphreys and Leighton¹³ found that pacifiers, although harmful, were not so damaging as thumb sucking.

Duyzings³⁵ points out that poorly shaped nipples may result in incompetent lip musculature and altered tongue pressure



FIGURE 12 Anterior view of a typical open bite resulting from a thumb sucking habit.

because of inappropriate functions. Nipples which have recently been designed copy as nearly as possible the human breast in shape and function and at the same time are believed to reduce the tendency toward jaw deformity.

The logical approach would be to prevent the sucking from becoming habitual. Failing this, consideration must be given to more drastic measures to break the habit when it is prolonged past age four.

TABLE 7 Prevalence of malocclusion in children with thumb and finger sucking.

Author	Description of sample	Number	Per cent with habit and malocclusion
Korkhaus ⁹ 1928	Unselected group (age 6)	643	21.0
Korkhaus ⁹ 1928	Unselected group (age 14)	568	4.0
Gardiner ¹⁶ 1956	Unselected group (ages 5-15)	1,000	14.0
Rhobotham ²⁵ 1933	Cases of malocclusion	100	25.0
Lewis ³³ 1930	Cases of thumb sucking	30	80.0
Johnson ³¹ 1939	Cases of thumb sucking	173	9.0
Kjellgren ³⁴ 1938	Cases of thumb sucking	167	87.0
	Cases without thumb sucking	1,000	1.6 (no habit)

TABLE 8 Relation of post-normal occlusion to thumb sucking.

Author and year	Post-normal occlusion	Post-normal occlusion with habit %	Normal occlusion	Normal occlusion with habit %
Ruttle et al ²⁹ 1947	24	83.0	43	30.0
Humphreys and Leighton ¹³ 1950	500	36.6	500	18.4
Popovich ¹⁵ 1955 (3-year olds)	45	57.8	176	29.5

Many psychologists claim that children who rely on habits as emotional outlets beyond the normal age (3 years), are demonstrating a deep psychological need. Stopping the habit may create personality problems or a switch to another less desirable habit. Yet in the 225 cases observed at Northwestern University Dental School, not a single case of habit transference or psychic trauma was observed as a result of breaking the habit. A simple crib-shaped appliance is placed in the roof of the child's mouth to break the suction between the thumb or finger and the roof of the mouth (Figure 13). The

appliance is cemented onto the teeth and rests passively in the mouth. No restraint is imposed upon the child who is still able to move the arms and place the thumb or finger in his mouth. Once the suction is broken, the habit is neither enjoyable nor satisfying and there is no desire to continue. Figure 14 shows the self-correction of the deformity illustrated in Figure 13 after a crib had been in place for twelve months.

Many home remedies have been recommended to stop an aggravating oral habit but the writer has some misgivings about their efficiency.

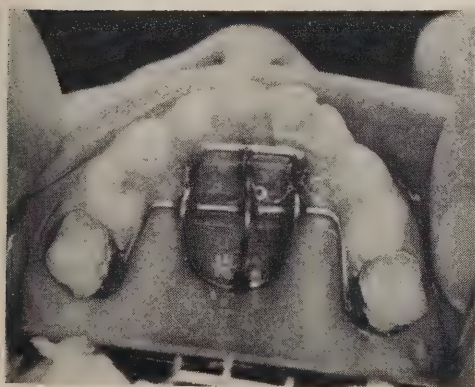


FIGURE 13 Occlusal view of the tapered arch of a thumb sucker with crib in position.

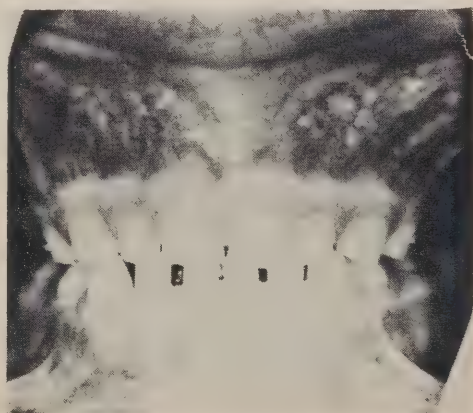


FIGURE 14 Anterior view of the same patient as in Figure 12. The malocclusion has corrected itself after the habit was arrested.

TABLE 9 Overbite in cases with normal mesio-distal molar relationship at seven to eight years of age.*

Group	Number of cases	More than one-third overbite
No loss in the lower jaw	29	31 per cent
Loss on one side of the lower jaw	21	27 per cent
Loss on two sides of the lower jaw	60	82 per cent

*Pringle.²³

The difference in the frequency of deep overbite between cases with losses on both sides in the lower jaw, and cases without any loss is 51 ± 9.9 per cent and is therefore significant.

HEREDITARY FACTORS IN MALOCCLUSION

There are many other types of malocclusion such as open bites, closed bites, anterior and posterior cross-bites. Many of these similar-appearing anomalies are believed to be controlled either by hereditary factors and/or environmental factors. For instance, Ballard³⁶ assumes that a certain type of closed bite is a dominant hereditary characteristic, whereas Pringle²³ showed that the premature loss of lower deciduous molars increases the overbite. (Table 9).

It is only recently that systematic investigations have been carried out on the role of hereditary factors in the aetiology of malocclusion. The logical prevention would be to attack the genetic factors involved. An approach of this nature in humans would be very difficult. Seipel²⁷ sums up the problem in this way. "On human material, the genetic prevention is left entirely to natural selection, and this factor is obscured and acted against by the therapeutic efforts. The large-scale treatment of anomalies is — from a genetic point of view and as far as inheritable

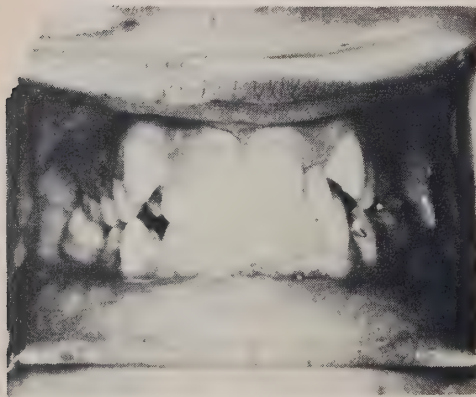


FIGURE 15 Anterior view of a malocclusion where the teeth are too large for the jaws. The crowding usually occurs in the incisor and cuspid regions, certainly the worst location from an aesthetic standpoint.

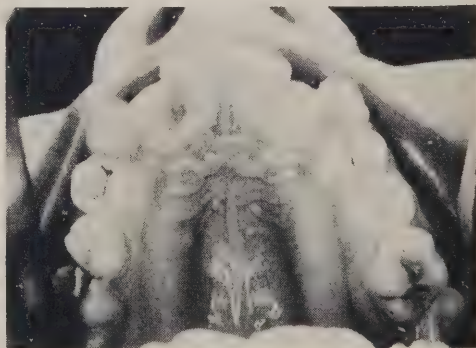


FIGURE 16 Occlusal view of same patient as in Figure 15. Note the crowding of the incisors which also increases caries susceptibility.

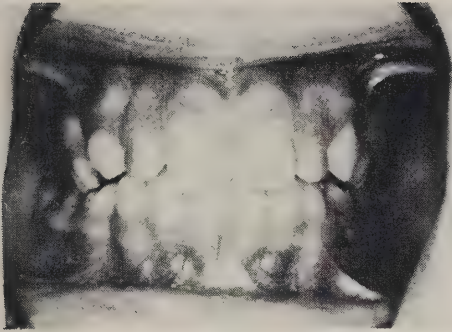


FIGURE 17 Anterior view of a similar case to that illustrated in Figure 15. This patient has been treated by serial extraction. As a result the incisors are in good alignment.

traits are concerned — working quite against prevention. Such treatment is facilitating the multiplication of anomalies.”

There is a type of malocclusion characterized by extreme crowding in the maxillary and mandibular cuspid regions (Figure 15 and 16). It is caused by a disharmony in the size of teeth and jaw and is attributed by Asbell³⁸ and Muzj et al³⁹ to a coincidence of hereditary factors that are incompatible. Gardiner¹⁶ estimated that 11.4 per cent of 1,000 unselected school children, age 5-15 years, had malocclusion of this type. Whereas this particular anomaly cannot be prevented, interception of the malocclusion by means of serial extractions of certain deciduous and permanent teeth can be very effective in reducing its severity (Kjellgren,⁴⁰ Jewell⁴¹) Figure 17 and 18.

MEDICAL PROPHYLAXIS

The fourth aspect of prevention is medical prophylaxis. Basically, this would involve the treatment of specific disease, endocrine and nutritional disturbances. Examples of anomalies associated with endocrine disturbances are acromegaly (hyperpituitarism) and cretinism (hypothyroidism). Engel et al⁴² showed in treat-

ed cases of hypothyroidism that the facial skeleton returns to normal size and that the teeth resume normal relationships. Condylar arrest from rheumatoid arthritis in a child is nothing less than tragic.

It is difficult to find reliable data and definite conclusions on the relation of nutritional disturbances and malocclusion. Weinmann and Schour⁴³ have shown that Vitamin D deficiency (rickets) in rats affects condylar growth of the mandible.

It has been shown that there is a relationship between the physical consistency of our diet and maldevelopment of the dental arches (Johns and Moyers⁴⁴). Our highly refined, pappy diet requires very little masticatory function compared to the rough coarse food of primitive diets. A primitive fibrous diet produces less caries, and ideal wear on the teeth which is very important during the period of jaw growth. Cusp interferences from lack of wear create abnormal jaw relationships by preventing the mandibular teeth from assuming a more forward position with growth.⁴⁶ When recognized, this anomaly is prevented by judicious removal of the cuspal interferences.

Elimination of specific infections undoubtedly plays a preventive role. Mid-

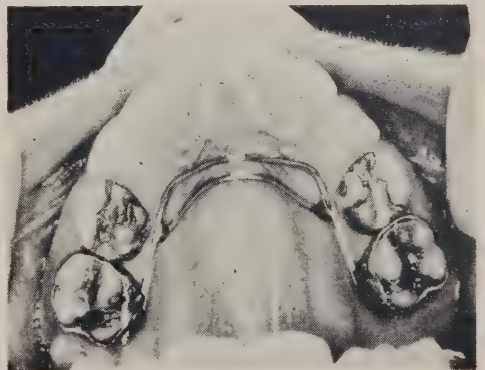


FIGURE 18 Occlusal view of same patient as in Figure 17. There is good arch form and tooth positioning. A retaining arch which is part of the treatment is in place.

dle ear infections have been known to spread into the temporomandibular joint and arrest condylar growth.

Mouth breathing that is caused by rhinological disorders is considered by many authors as a cause of malocclusion. Concomitant to the mouth breathing are altered tongue posture and perversions in function of the orofacial musculature (Salzmann⁴). The effects of mouth breathing on the jaws have not been studied thoroughly.

SUMMARY

Published statistics from many countries reveal a high incidence of malocclusion. The estimates have a wide range of divergence. One of the major problems is assessing the data because standard methods were not used. An adequate and clear definition of what constitutes a malocclusion is paramount for systematic epidemiological studies. It is understandable that there is so much divergence because norms are not yet clearly established due to the wide variation in human morphology. One would probably be near the truth in saying that at least 50 per cent (Tables 2 and 3) of school children have a malocclusion. Certainly a large proportion would need treatment (Tables 2-8). The high prevalence of malocclusion among children should make it a legitimate concern of public health bodies.

The commonest preventable causes of malocclusion are dental caries (premature extractions of deciduous teeth) and oral habits. Their prevention has been discussed. One point should be stressed that is often overlooked. Fluoridated drinking water not only reduces dental decay by 65 per cent but also prevents large numbers of malocclusions at the same time.

The prevention of hereditary factors is limited mainly because of difficulty in controlling the genetic factors in humans. It is possible to intercept with early treatment a large number of inherited conditions and reduce the extent of the deformity.

Medical prophylaxis can contribute to prevention of malocclusion by controlling endocrine and nutritional disturbances and infections.

Progress in evaluating the role of orthodontics in public health has probably been deterred because of the lack of a standardized system for recording the type and degree of malocclusion and optimum ages for study. It is indeed a tragedy that there have been several studies completed in many countries which alas cannot be compared because of different recording methods. A major contribution in rectifying this serious error is being made in our own country at the Burlington Orthodontic Research Centre.

Finally one might say, without fear of contradiction, that the problem of malocclusion in public health is far from being solved.

RÉSUMÉ

Les statistiques du monde entier montrent que l'incidence des malocclusions est élevée; on note toutefois des divergences assez considérables dans l'interprétation de ces statistiques, car il n'y a pas de méthode standardisée — et c'est regrettable — pour compiler les résultats de ces recherches. Il faut d'abord, pour systématiser ces études épidémiologiques, établir une définition claire et précise de ce qu'est une malocclusion. Ces divergences s'expliquent facilement parce qu'à cause des différences nombreuses qui existent dans la morphologie humaine, on n'a pas encore adopté des normes identiques. On ne se tromperait pas beaucoup en déclarant qu'au moins cinquante pour cent des écoliers souffrent de malocclusions (Tableaux 2 et 3).

Un grand pourcentage de ces cas auraient besoin de traitements (Tableaux 2 à 8). Les organismes d'hygiène publique ont raison de s'alarmer de l'abondance des malocclusions chez les écoliers.

Les causes les plus fréquentes des malocclusions et qui peuvent se prévenir

sont la carie dentaire (extraction prématurée des dents primaires) et les mauvaises habitudes. On a beaucoup parlé de cette prévention, mais il est un aspect qu'on oublie trop souvent. L'eau fluorée, non seulement prévient la carie dentaire dans une proportion de 55 pour cent, mais elle empêche aussi un grand nombre de malocclusions.

Les facteurs héréditaires peuvent difficilement se contrôler à cause de l'influence des agents génétiques chez les humains. Il est possible de contrecarrer, par des traitements précoces, une grande variété de malformations héréditaires et de contrôler l'étendue des difformités qu'elles peuvent engendrer.

La médecine, comme mesure prophylactique, peut collaborer par le contrôle des désordres endocriniens, nutritifs et infectieux.

L'évaluation du rôle de l'orthodontie dans l'hygiène publique n'a probablement pas fait de grands progrès à cause de l'absence d'un système standardisé pour noter le genre et le degré des malocclusions et déterminer les âges où ces études peuvent se faire avec le plus grand avantage. Il est navrant de penser que des recherches dans ce sens ont été réalisées dans plusieurs pays et qu'elles ne peuvent pas servir parce qu'on a utilisé des méthodes différentes pour en compiler les résultats. On tente actuellement dans notre pays de corriger cet état de chose au Centre des recherches d'orthodontie à Burlington.

Enfin, on peut dire sans se tromper que le problème des malocclusions en hygiène publique est loin d'être résolu.

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516 Medical Arts Bldg.

ABSTRACTS

DIAGNOSIS OF SIALOLITHIASIS

A. E. Viener, *J. Oral Surg., Anes. & Hosp. D. Serv.* 19:428, September 1961.

Salivary stones may be located in the ducts of salivary glands or in the glands themselves. A single stone or multiple stones may be present. The aetiology of these stones is unknown; however, it is postulated that desquamated epithelial cells or bacteria may form a nidus around which the stones form. The principal symptoms may include any combination of the following: (1) pain and swelling over the gland involved which is in-

creased on eating or at the sight of certain foods; (2) an inflammatory reaction in the mucosa around the orifice when a stone is present near the orifice of the involved duct, and (3) repeated acute exacerbations of secondary or primary infections in the gland which may involve not only the gland but also the surrounding soft tissues and result in a diffuse cellulitis.

In instances of partial obstruction, the pain and swellings may disappear gradually after the gland empties, or compression of the gland may cause immediate emptying and relief. Frequently pus can be expressed from the duct because of infection by the chronic irritation of a

jagged stone. Back pressure of saliva caused by an obstruction, or constant irritation by a stone, predisposes the gland to infection.

In a great percentage of patients with a nonspecific inflammation of the salivary glands, calculi will be found if the parotid gland is involved.

Complete extraoral radiographic examination should include a lateral view of the mandible in an open bite position, a posteroanterior view of the mandible, and a view of the zygomatic arch. Iodized oil such as Lipiodol also can be used to make a sialographic study.

A dental film placed against the mucosa of the cheek, with the centre of its anterior border over the orifice of Stensen's duct and the rays directed at right angles to the film, will produce an excellent view of any stones lying in the anterior part of the duct. By directing the rays more anteriorly with the film in approximately the same position, or more posteriorly, a survey of a more posterior section of the duct can be made.

If stones are suspected in the sublingual or submaxillary gland or ducts, a large occlusal film, placed between the upper and lower teeth with the cone directed just posterior to the mentum and at right angles to the film, will give an excellent view of any calculi in the tissues of the floor of the mouth.

The method of removal of calculi from the duct of a salivary gland will depend upon: (1) size and shape of the stone; (2) location of the stone in the duct; (3) the length of time in which the stone has been present in the duct; (4) the condition of the patient (for example, it would be difficult during an acute exacerbation),

and (5) the duct in which the stone is located (Stensen's, Wharton's, or sublingual).

A small stone can frequently be milked out of the duct. The duct is dilated with suitable probes, then the stone is expressed by manual manipulation along the duct. Care must be taken to prevent forcing the stone further back into the duct with the probe or during manual manipulation. This procedure is successful more often in removing stones from Wharton's duct than from Stensen's duct, the course of the former being straight in comparison to the latter. Stones in Stensen's duct often are located posterior to the almost right-angle curve of the duct as it passes around the anterior border of the masseter muscle, thus making removal by manual manipulation difficult. Stones located in salivary ducts in the floor of the mouth are easily removed surgically. Those located in Stensen's duct, however, are much more difficult when they occur in that portion of the duct that lies lateral to the masseter muscle.

Occasionally a patient will have the classic symptoms of an occluded duct, but no stone can be found. In these instances, before Lipiodol studies or duct dilation is done, simple milking of the gland may produce a mucous plug which was the aetiological factor. When a stricture is found on a sialogram, the examiner should not give up his search for a stone until all the previously mentioned diagnostic aids are exhausted, as a stricture is sometimes found concomitant with a stone. When no stone is present, the injection of an iodized oil for diagnostic purposes is of therapeutic value for its antiseptic properties as well as its function as a lavage.

EDITORIALS

Dentistry and the Treaty of Rome

Recent editorials in two leading British dental publications^{1,2} have commented on the possible implications of the European Economic Community for the future of dental practice in Great Britain. The Treaty of Rome, signed in 1957, provided for the establishment of the European Economic Community, better known as the Common Market. The member countries are Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. Although the treaty is mainly concerned with trade and with economic and fiscal considerations, it also provides for the progressive abolition, over a period of ten years, of restrictions on the free practice of professions and the "harmonization of the educational systems and diplomas" of the member states. It is intended that the members of all professions who have the right to practise in one member state shall in due course be entitled to practise in any of those countries which are members of the Community. Current negotiations between Her Majesty's Government and the governments of the European Economic Community and the possible entry of the United Kingdom into full membership within the Community thus have a very special significance for the dental profession in each of the countries concerned.

There is considerable variation in the different national patterns of education, dental training and dental practice throughout Europe. Certain countries have grades of dentists. Others require a medical qualification as a prerequisite to dental education. Some countries, moreover, do not have dental licensure or registration as it is understood in North America and therefore lack the deterrent to unethical practice which licensure provides. Consequently, there is understandable concern in Great Britain over the effect of professional standards that may result from whatever changes in the pattern of education or modification of national legislation regulating practice might be required under the terms of membership in the Community.

Although the Treaty of Rome gives recognition to the particular difficulties which surround the abolition of restrictions on the health professions, and although matters related to the conditions governing the exercise of these professions are expressly reserved for decision by unanimous vote among the member states, there is no assurance that British membership in the Community could not ultimately lead to an unrestricted interchange of practitioners between all the countries concerned. The attitude of the British dental profession to such an

eventuality is thus of more than academic interest.

Two proposals have so far been advanced in the interest of safeguarding professional standards in that country. One of these concerns admission to associate membership in the British Dental Association of dentists from Community member states desiring to practise in Great Britain. The purpose of such an arrangement would be to bring the newly arrived dentist within the influence of the British Dental Association and thereby acquaint him with the problems and customs of his British colleagues. The other proposal calls for the creation of an inter-European dental licensing authority and the concurrent establishment of dental examining boards at respective national levels, thus granting a general recognition of dental qualifications without necessarily permitting totally unre-

stricted freedom of professional movement.

The question of British membership in the European Economic Community is essentially a matter for negotiation between the governments concerned. Although such negotiations are primarily related to economic and financial aspects, their ramifications have not escaped the notice of the dental profession. British dentists consider that they, as well as the negotiators should be aware of exactly what is involved in European planning. As those who ultimately must provide services in accordance with such planning, they wish to be in a position to contribute a considered opinion.

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BUREAUX, COMMITTEES AND COUNCILS

Dental Students' Register: 1961-62

Bureau of Economic Research

Enrolment. — During the 1961-62 term, 1,052 students are enrolled in Canada's six dental schools. This represents an increase of 15 per cent over last year's enrolment. The enrolment of first-year students has increased 85 per cent in the last decade.

Forty-two graduates are enrolled for further study. Thirty of these students are at the University of Toronto and ten at the

Université de Montréal. Twenty-one graduates are taking specialty programs — nine in orthodontics, four in each of public health and oral surgery, and the others in periodontics and paedodontics.

Dental hygienists. — Dental hygienists are now being trained at Dalhousie and Alberta Universities as well as the University of

TABLE 1 Undergraduates enrolled in Canadian dental schools, 1961-1962.

Dental school	Total	Year			
		1st	2nd	3rd	4th
Dalhousie	60	18	13	14	15
McGill	139	39	33	31	36
Montreal	172	60	28	39	45
Toronto	429	120	110	114	85
Manitoba	95	33	27	20	15
Alberta	157	50	44	33	30
Total	1,052	320	255	251	226

TABLE 2 Women dental students enrolled in Canadian dental schools, 1961-1962.

Dental school	Total		Year			
	No.	Per cent	1st	2nd	3rd	4th
Dalhousie	2	3.33	2	..	..	..
McGill	3	2.15	..	..	..	3
Montreal	4	2.32	1	2	..	1
Toronto	28	6.52	6	10	7	5
Manitoba	1	1.05	..	..	..	1
Alberta	..	..	..	..	..	..
Total	38	3.61	9	12	7	10

TABLE 3 Dental graduates registered at Canadian universities for further study, 1961-1962.

Dental school	Graduate*	Post-graduate†	Special‡
Dalhousie	0	0	0
McGill	0	0	1
Montreal	5	5	0
Toronto	5	25	0
Manitoba	0	1	0
Alberta	0	0	0
Total	10	31	1

*Graduate students are those dental graduates registered in the graduate school of a university and proceeding to a Master's or Ph.D. degree.

†Postgraduate students are dental graduates registered in the dental faculty proceeding to a degree [e.g. the B.Sc.D.), diploma or certificate.

‡Special students are dental graduates who are taking postgraduate instruction in the dental faculty but are not proceeding to a recognized university degree, diploma, or certificate.

Toronto. The Dalhousie and Alberta courses began in September 1961. When the total capacities of the three programs are reached, 92 hygienists can be trained in each of the course's two years. At present 85 hygienists are in training. All provinces except British Columbia and Quebec have residents en-

rolled in these Canadian courses.

Wastage. — Wastage between the first year of the 1960 term and the second year of the 1961 term was 11 per cent. Twenty-four of the students who did not return to second year failed while six did not return for other reasons.

TABLE 4 Dental graduates registered in each year of specialty programs at Canadian universities, 1961-1962.

Specialty	Total	Year		
		1st	2nd	3rd
Dental public health	4	4	..	..
Oral surgery	4	2	1	1
Orthodontics	9	4	5	..
Paedodontics	1	..	1	..
Periodontics	3	2	1	..
Total	21	12	8	1

TABLE 5 Dental hygienists and auxiliaries enrolled in Canadian dental schools, 1961-1962.

Dental school	Total	Year	
		1st	2nd
Dalhousie	8	8	..
Toronto	57	41	16
Alberta	20	20	..
Total	85	69	16

TABLE 6 Wastage of first-year students, 1960-1961.

Dental school	Loss		Reason		
	Students	Per cent	Failed	Transferred	Other
Dalhousie	2	15.4			2
McGill	4	10.8	4		
Montreal	9	27.3	7	2	
Toronto	7	6.2	7		
Manitoba	6	21.4	6		
Alberta	2	4.3		2	
Total	30	11.1	24	4	2

TABLE 7 Students graduating from Canadian dental schools, 1961.

Dental school	Graduates			Per cent women	Foreign-born women	Per cent foreign-born of all women
	Total	Men	Women			
Dalhousie	13	13	0	0.0	0	N/A
McGill	34	31	3	8.8	2	66.7
Montreal	31	30	1	3.2	1	100.0
Toronto	72	67	5	6.9	4	80.0
Alberta	24	23	1	4.2	0	0.0
Total	174	164	10	5.7	7	70.0

Graduates. — The number of students graduating in 1961 was down 19 per cent to 174. It is interesting to note that seven of the ten women graduates were foreign-born. The average age of all graduates was 25 years.

Capacity. — The dental schools can accommodate a maximum of 338 students in each year. Only the Université de Montréal has definite plans to increase its capacity. The expansion program will allow the school to accommodate 85 students in each class.

TABLE 8 Average age of graduates from Canadian dental schools, 1961.

Dental school	Average age
Dalhousie	28
McGill	28
Montreal	27
Toronto	23
Alberta	26
Total	25

TABLE 9 Number of students enrolled in Canadian dental schools, 1952-1961.

Term	Total		Dental school					
	No.	Per cent change	Dalhousie	McGill	Montreal	Toronto	Manitoba	Alberta
1952-53	719	— 4.8	50	141	111	294	..	123
1953-54	707	— 1.7	50	142	98	299	..	118
1954-55	748	+ 5.8	48	138	130	313	..	119
1955-56	769	+ 2.8	47	136	161	310	..	115
1956-57	785	+ 2.1	47	137	184	305	..	112
1957-58	787	+ 0.3	53	141	176	310	..	107
1958-59	824	+ 4.7	55	144	178	319	21	107
1959-60	906	+10.0	60	145	172	368	42	119
1960-61	914	+ 0.9	54	140	151	371	64	134
1961-62	1,052	+15.1	60	139	172	429	95	157

TABLE 10 Number of students graduating from Canadian dental schools, 1952-1961.

Year	Total		Dental school				
	No.	Per cent change	Dalhousie	McGill	Montreal	Toronto	Alberta
1952	215	—27.1	12	36	55	85	27
1953	178	—17.2	14	34	20	75	35
1954	172	— 3.4	14	37	20	69	32
1955	174	+ 1.2	13	35	19	78	29
1956	168	— 3.4	13	33	20	76	26
1957	186	+10.7	11	29	34	78	34
1958	203	+ 9.1	16	34	49	75	29
1959	193	— 4.9	17	36	40	74	26
1960	215	+11.4	14	37	42	94	28
1961	174	—19.1	13	34	31	72	24

TABLE 11 Number of first-year students at Canadian dental schools, 1952-1961.

Term	Total		Dental school					
	No.	Per cent change	Dalhousie	McGill	Montreal	Toronto	Manitoba	Alberta
1952-53	172	— 0.6	12	35	20	75	..	30
1953-54	194	+12.8	12	32	43	77	..	30
1954-55	211	+ 8.8	13	37	55	75	..	31
1955-56	199	— 5.7	12	35	51	74	..	27
1956-57	206	+ 3.5	12	34	52	78	..	30
1957-58	194	— 5.8	13	34	39	80	..	28
1958-59	250	+28.9	14	38	57	90	21	30
1959-60	279	+11.6	18	38	44	119	24	36
1960-61	268	— 4.0	13	38	33	111	27	46
1961-62	320	+19.4	18	39	60	120	33	50

TABLE 12 Changes in enrolment, 1941 to 1961 and 1951 to 1961.

Dental school	Per cent change					
	All students		Graduates		1st Year	
	Since 1941	Since 1951	Since 1941	Since 1951	Since 1941	Since 1951
	%	%	%	%	%	%
Dalhousie	+140.0	+ 22.4	+ 85.7	+ 8.3	N/A	+ 50.0
McGill	+127.9	— 4.1	+ 88.9	— 8.1	N/A	+ 5.4
Montreal	+ 45.8	+ 22.9	+121.4	— 55.1	N/A	+275.0
Toronto	+ 54.9	+ 43.0	+ 60.0	— 52.6	N/A	+ 51.9
Alberta	+220.4	+ 29.8	+ 84.6	— 4.0	N/A	+ 72.4
Total	+144.7	+ 39.3	+ 79.4	— 41.0	N/A	+ 85.0

TABLE 13 Capacity of undergraduate classes, Canadian dental schools, 1961-1962.

Dental school	Capacity
Dalhousie	25
McGill	40
Montreal	60
Toronto	125
Manitoba	33
Alberta	55
Total	338

Residential Distribution. — There are 5.4 Canadian dental students per 100,000 population. Among the ten provinces, the figure ranges from 1.7 for Newfoundland to 8.7 for Manitoba. In 1957-58, the last year before the Faculty of Dentistry opened at the University of Manitoba, the province had only 2.9 stu-

dents per 100,000 population. In the four years since, the ratio has risen steadily.

Ten per cent of all students in Canadian schools come from other countries. Sixty-eight per cent of the students at Dalhousie University, 55 per cent at McGill University and 45 per cent at the University of Alberta are not residents of the province in which the dental school is located.

Cost of education. — University expenses, including tuition and incidental fees, textbooks and supplies, cost the dental student an average of \$3,600 for the four-year course. Room and board expenses vary considerably depending upon the location of the school and the type of accommodation available. They average \$2,800-\$3,000 for the four years.

Predental expenditures vary according to the school and the number of predental years required. The median expenditure for the combined predental and dental years is \$7,700; the mean is \$8,400.

TABLE 14 Students admitted with advanced status to Canadian dental schools, 1961-1962.

Country in which student graduated	Dental school					
	Dalhousie	McGill	Montreal	Toronto	Manitoba	Alberta
Argentina						1
Australia	1			1		
Haiti				1		
India				1		
Iran					1	
U.S.A.		1				
Great Britain	1			6		1
European countries		1	2	7	5	
Total	2	2	2	16	6	2

TABLE 15 Predental training of undergraduates enrolled in Canadian dental schools, 1961-1962.

Dental school	Years				Canadian degree		Degree from outside Canada	
	1	2	3	4	Bachelor	Other	Bachelor	Other
Dalhousie	...	12	11	10	23	..	2	2
McGill	...	23	28	16	44	..	24	4
Montreal	...	..	..	..	168	..	..	4
Toronto	335	15	6	1	32	16	2	22
Manitoba	39	18	6	2	21	3	..	6
Alberta	77	37	11	3	27	..	1	1
Total	451	105	62	32	315	19	29	39
Per cent of total undergraduates	42.8	10.0	5.9	3.0	14.0	17.8	2.7	3.8

TABLE 16 Graduates with prior bachelor's degree, Canadian dental schools, 1961.

Dental school	Total graduates	Graduates with bachelor's degree	Per cent
Dalhousie	13	3	23.1
McGill	34	25	73.5
Montreal	31	30	96.8
Toronto	72	17	23.6
Alberta	24	..	...
Total	174	75	43.1

TABLE 17 Residential distribution of Canadian dental students, 1961-1962.

Residence	Total		Dental school						
	No.	Per cent	Dalhousie	McGill	Montreal	Toronto	Manitoba	Alberta	All American
Newfoundland	8	.8	7			1			
Prince Edward Island	2	.2	2						
Nova Scotia	20	2.0	19	1					
New Brunswick	14	1.5	12		2				
Quebec	226	23.1	2	62	157	3	2		
Ontario	419	42.9	2	7	3	395	2	1	9
Manitoba	79	8.1	1	1		3	71	1	2
Saskatchewan	48	5.0		3	1	2	12	29	1
Alberta	89	9.1						86	3
British Columbia	71	7.3	2	7		6	6	36	14
Canada	976	100.0	47	81	163	410	93	153	29

TABLE 18 Ratio of Canadian dental students to population of home province, 1957-1961.

Province	1957-58	1958-59	1959-60	1960-61	1961-62
Newfoundland	1/42600	1/39818	1/49889	1/57375	1/58625
Prince Edward Island	1/19800	1/50000	1/102000		1/52500
Nova Scotia	1/33429	1/37368	1/37684	1/42529	1/36600
New Brunswick	1/24565	1/23080	1/28095	1/35294	1/43714
Quebec	1/22338	1/23147	1/23469	1/25530	1/23084
Ontario	1/18194	1/19343	1/16533	1/17056	1/14816
Manitoba	1/34400	1/24857	1/18830	1/16345	1/11544
Saskatchewan	1/25853	1/22200	1/18792	1/18200	1/19125
Alberta	1/19016	1/18197	1/18014	1/18594	1/14854
British Columbia	1/24783	1/23754	1/25323	1/25903	1/23042
Canada	1/21799	1/22026	1/20544	1/21334	1/18615

TABLE 19 Canadian dental students per 100,000 population by province, 1957-1961.

Province	1957-58	1958-59	1959-60	1960-61	1961-62
Newfoundland	2.3	2.5	2.0	1.7	1.7
Prince Edward Island	5.1	2.0	1.0	..	1.9
Nova Scotia	3.0	2.7	2.7	2.4	2.7
New Brunswick	4.1	4.3	3.6	2.8	2.3
Quebec	4.5	4.3	4.3	3.9	4.3
Ontario	5.5	5.2	6.0	5.9	6.7
Manitoba	2.9	4.0	5.3	6.1	8.7
Saskatchewan	3.9	4.5	5.3	5.5	5.2
Alberta	5.3	5.5	5.6	5.4	6.7
British Columbia	4.0	4.2	3.9	3.9	4.3
Canada	4.6	4.5	4.9	4.7	5.4

TABLE 20 Residential distribution of students from outside the province in which dental school is located, 1961-1962.

Residence	All dental schools	Dental school					
		Dalhousie	McGill	Montreal	Toronto	Manitoba	Alberta
Other provinces of Canada	157	28	19	6	15	22	67
Other countries:							
U. S. A.	57	6	37	5	8		1
Great Britain	10	1	2		7		
West Indies	13		12		1		
Hong Kong	5	2	2			1	
Bermuda	4	2	2				
Australia	2	1			1		
British Guiana	2		2				
Ghana	2						2
Nigeria	1						1
Trinidad	1	1					
India	1				1		
Singapore	1					1	
Haiti	1				1		
European countries	5		1	4			
Total other countries	105	13	58	9	19	2	4
Total	262	41	77	15	34	24	71
Per cent of all students at school							
Other provinces of Canada	14.9	46.6	13.7	3.5	3.5	23.2	42.7
Other countries	10.0	21.7	41.7	5.2	4.4	2.1	2.5
Total	24.9	68.3	55.4	8.7	7.9	25.3	45.2

TABLE 21 Residential distribution of hygienists and auxiliaries in Canadian dental schools, 1961-1962.

Residence	Total		Dental school		
	No.	Per cent	Dalhousie	Toronto	Alberta
Newfoundland	1	1.1	1		
Prince Edward Island	2	2.4		2	
Nova Scotia	5	5.9	5		
New Brunswick	1	1.1	1		
Quebec	0				
Ontario	53	62.4	1	50	2
Manitoba	0				
Saskatchewan	8	9.4		4	4
Alberta	15	17.7		1	14
British Columbia	0				
Canada	85	100.0	8	57	20

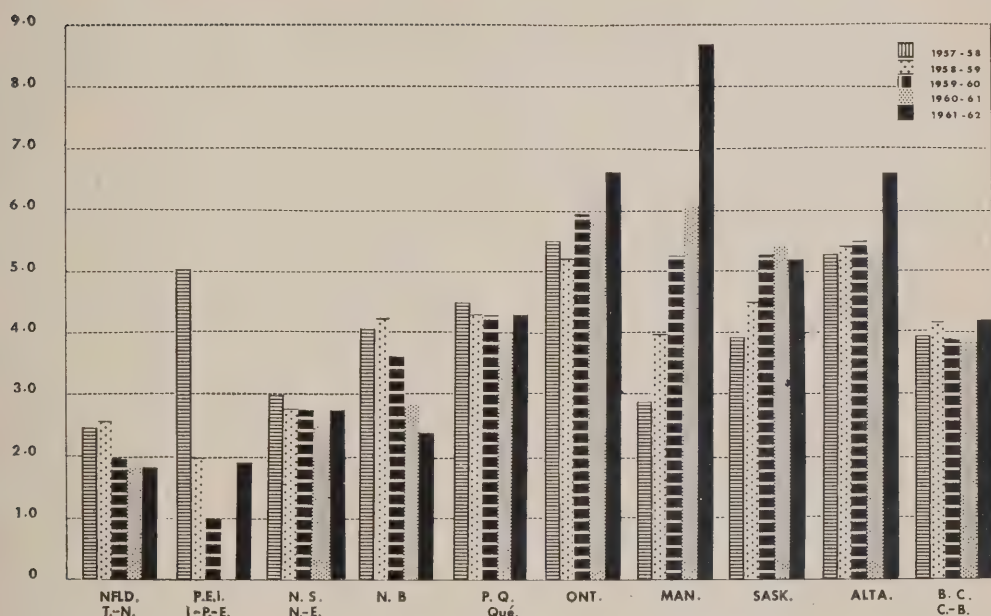


FIGURE 1 Dental students per 100,000 population, by province, 1957-1961.

TABLE 22 Dates of application, admission and graduation, Canadian dental schools, 1961-62 and 1962-63.

Dental school	Freshman application 1962	Term			
		1961-62		1962-63	
		Admission	Graduation	Admission	Graduation
Dalhousie	May 31	Sept. 5	May 17	Sept. 4	May 16
McGill	Mar. 1	Sept. 6	May 27	Sept. 5	May 30
Montreal	July 1	Sept. 6	May 31	Sept. 5	May 31
Toronto	Sept. 1	Sept. 20	May 29	NA	NA
Manitoba	April 30	Sept. 11	May 24	Sept. 11	May 24
Alberta	May 14	Sept. 5	June 1	NA	NA

TABLE 23 Financial aid available to undergraduates and graduates at Canadian dental schools, excluding government funds.

Dental school	Undergraduates		Graduates
	Scholarships	Loans	Scholarships and/or fellowships
Dalhousie	Yes	Yes	No
McGill	Yes	Yes	No
Montreal	No	Yes	No
Toronto	Yes	Yes	Yes
Manitoba	Yes	Yes	Yes
Alberta	Yes	Yes	No

TABLE 24 Estimated cost of dental education at Canadian dental schools.

Item	Average cost \$	Dental school					
		Dalhousie \$	McGill \$	Montreal \$	Toronto \$	Manitoba \$	Alberta \$
Predental							
Tuition	572	810	NA	850	410	500	290
Text-books	92	100	NA	60	50	150	100
Supplies	33		NA		15	50	
Incidentals	75	150	NA	40	60	50	
Sub-total university expenses	737	1,060	NA	950	535	750	390
Room and board	1,164	1,170	NA	2,400	660	990	600
Total	1,901	2,230	NA	3,350	1,195	1,740	990
Dental							
Tuition	1,900	1,800	2,000	1,800	2,400	1,700	1,700
Instruments	1,680	1,100	2,000	1,100	490	1,000	1,458
Text-books		235		200	200	400	
Supplies		75		200	360	125	
Incidentals		400		100	240	400	
Sub-total university expenses	3,580	3,610	4,000	3,400	3,690	3,625	3,158
Room and board	3,043	2,875	3,000	5,000	2,640	2,340	2,400
Total	6,623	6,485	7,000	8,400	6,330	5,965	5,558
Grand total	8,449	8,715	NA	11,750	7,525	7,705	6,548

DENTISTRY IN THE NEWS

The Association

C.D.A. SECRETARY GIVES NOYES MEMORIAL LECTURE AT NORTHWESTERN UNIVERSITY

In an address given at Chicago on May 2, Canadian Dental Association secretary Don W. Gullett urged the dental profession to face up to 'the challenge of group action' and 'large scale organization in the provision of dental care'.

Delivering the Edmund Noyes Memorial Lecture at Northwestern University, Dr. Gullett emphasized that "the challenges of yesterday largely arose within the profession," whereas "today we face (socio-economic challenges) which press upon the profession from without."

"The strongly individualistic society of a few decades ago has been altered" and "a powerful trend toward group action has been established," Dr. Gullett explained, adding that "the momentum of the movement is such that it is not likely to be arrested except by proven failure." He noted that "little good is accomplished by standing aloof and crying 'socialism' and 'communism'."

Referring to the concept that all health services be available to all of the population, Dr. Gullett explained that this is not an attack on the health professions who constitute but one segment of society, but rather a part of the whole social movement which more or less affects our entire society. In this context two specific relationships — the relation of the individual practitioner to his patients, and the collective obligation of the profession to provide dental service for the nation — seem to arouse controversy within the dental profession. Yet these issues do not necessarily conflict and need exists for better understanding within the profession.

Dr. Gullett explained that over fifty countries have government health schemes. "The main question is whether health services of the future are to be under some compulsory government tax-sponsored scheme or under voluntary plans." He observed that in countries with compulsory health schemes, budgetary allocations seldom cover the de-

mands for expenditure. "When the money runs short the government has two choices — either to cut payments to practitioners or to cut services, or both. The rigidity imposed under such system is not conducive to the improvement of service." Moreover, "no matter what (the professional man) may decide by way of necessary service for a particular case, he is governed by rules or regulations based upon financial consideration . . . A system of this nature can readily remove enthusiasm of the individual and extract the urge for progress from a whole profession."

Observing that the health professions are faced with a vote-catching political situation as well as social and economic problems, and that "legislative action promising to provide medical and dental services does not make people healthy (although) many seem to think so," Dr. Gullett urged individual dentists to adjust to, not isolate themselves from a changing society.

NATIONAL RECRUITMENT CHAIRMAN REPORTS TO COUNCIL ON EDUCATION

Although no meeting of the Canadian Dental Association's National Recruitment Committee has been held this year, chairman W. J. Dunn reported an active recruitment year to the Council on Education at its March meeting. The National Recruitment Committee operates under the jurisdiction of the Council on Education of the Canadian Dental Association. Dr. Dunn reported that the National Recruitment Committee may meet in the Fall.

Considerable resource material has been revised and some new material added. Over two-hundred copies of the new recruitment information kit have been distributed, mostly to assist dentists preparing talks to high school students. A new dental hygiene career pamphlet, prepared by Mrs. Janet Burnham, director of the dental hygiene program at Dalhousie University, has also been issued. The booklet, formerly known as *Dentistry as a Professional Career* has been brought up-to-date and given a bright new cover and title, *Advantages of Careers in Dentistry*.

RECRUITMENT INCENTIVES URGED BY C.D.A. IN BRIEF TO ROYAL COMMISSION ON HEALTH SERVICES

Several of the recommendations made by the Canadian Dental Association in its brief to the Royal Commission on Health Services concern recruitment. The brief was discussed at public hearings of the Commission in Ottawa in March.

Four new dental schools and seven additional dental hygiene courses were suggested in the brief. One of the proposed new schools, at the University of British Columbia, may soon become a reality. The British Columbia legislature has budgeted for initial expenses of establishment of a Faculty of Dentistry there. The Canadian Dental Association recommended other dental schools in Saskatchewan, Ontario and Quebec as well as expansion of facilities at Dalhousie University. Dental hygiene programs at every dental school were also suggested.

Aiming specifically at recruitment, the Association called for increased grants to universities in order to permit reduction, and eventual elimination, of tuition fees; for a revolving loan fund for undergraduate and postgraduate dental students (the Association offering \$50,000 to be matched by government to start such a fund); preference for students from rural areas; and a detailed study by the Commission's research staff of recruitment to all health professions.

INTEREST IN DENTISTRY CAREERS INCREASING

Interest in dental careers appears to be increasing among high school students. This is indicated by the large number of coupons from the dentistry page in the *Careers Annual of Canadian High News* which have been received at Association headquarters. About two-hundred requests for more information about careers in dentistry came in as a result of last year's page. This year, in only one month since the date of publication over 300 coupons have been returned.

Canadian High News is a weekly newspaper for Canadian high school students with a circulation in secondary schools across Canada exceeding 100,000. Sponsored by nine dental supply companies, the dentistry page has appeared in this special careers issue for five consecutive years. The *Careers Annual* is published in early March, this year on March 10. The dentistry page contains a coupon which can be clipped and mailed to Canadian Dental Association headquarters for the booklet *Advantages of Careers in Dentistry*.

After booklets are sent out and coupons tabulated, the coupons are forwarded to either the secretary of the respective provincial licensing board or the chairman of a provincial recruitment committee. Most provincial groups have a system of personal follow-up to offer additional information and encouragement to those students who have shown their interest in careers in dentistry.

Coupons returned to Canadian Dental Association headquarters from Canadian High News dentistry page as of April 12, 1962.

Source	Public school	Grade 9	Grade 10	Grade 11	Grade 12	Grade 13	Unknown and others	Total
Nfld.	2		3					5
P.E.I.	1		1		1			3
N.S.		2	3	4	1		1	11
N.B.	1	1		4	3		2	11
P.Q.	4	7	8	12	6	2	2	41
Ont.	6	23	22	20	30	19	7	127
Man.	1	5	7	10	4	1	1	29
Sask.		4	3	5	12		6	30
Alta.	1	5	5	6	10	1	3	31
B.C.		6	5	5	3		5	24
Total	16	53	57	66	70	23	27	312

\$7,020 GRANTED IN C.D.A. STUDENTSHIPS

The Council on Research of the Canadian Dental Association recently granted a total of \$7,020 to ten undergraduate students at Canadian dental schools for summer studentships. The Council had received applications for funds totalling \$10,324. The Council's 1962 budget allocates \$9,000 for graduate fellowships and undergraduate studentships. Of this amount, \$2,000 had previously been committed to a studentship granted in 1961. Canadian Dental Association studentships are awarded to undergraduate students who are engaged for the summer months by the research departments of Canadian dental schools.

Canada and the Provinces

PREDENTAL GROUP ACTIVE AT UNIVERSITY OF BRITISH COLUMBIA

An active group of predental students at the University of British Columbia recently formally established itself as the University of British Columbia Predental Society. Members of the British Columbia Dental Association's recruitment committee and Vancouver and District Dental Society were instrumental in organizing the group. Sixteen students attended the predental society's first meeting at the home of Dr. C. W. Gardner in Vancouver. At a general meeting four weeks later, 55 members were present. A visit to one of the meetings of the Vancouver and District Dental Society, films and talks on various aspects of dentistry have been featured at subsequent weekly meetings of the group. Vancouver dentists are co-operating to sustain the interest of the students in dentistry.

QUEBEC COMMITTEE STUDIES RECRUITMENT

The provincial recruitment committee in Quebec has undertaken an analysis of recruitment problems in that province. Dr. Gustave Ratté, a former president of the Canadian Dental Association, is chairman of the committee appointed by the College of Dental Surgeons of the Province of Quebec.

With the assistance of dean J. McCutcheon of McGill University and associate dean J. P.

Lussier of the Université de Montréal, a study of sources of potential dental students was recently made. Information was also collected about sources of funds to assist dental students. It was reported that a \$30,000 loan fund established two years ago by the College of Dental Surgeons has been almost exhausted.

Following the studies, a provincial recruitment program was drafted. Contacts with their affiliated colleges are being handled by the two Montreal dental schools. Dr. Ratté and Dr. L. Bernier are in charge of arrangements for the Quebec City area and Laval University affiliates. The Public Relations Committee of the College of Dental Surgeons is assisting with arrangements for outside publicity.

BRITISH COLUMBIA

Spring Clinic in Kelowna.—On April 7 the Interior Dental Society held its spring meeting at the Capri Motor Inn with 25 members in attendance. R. B. Emslie presided at the all-day meeting and he was ably assisted by the secretary, M. J. R. Leitch. A feature of the meeting was an orthodontic clinic in three parts, presented by R. D. Haryett, chief of the orthodontic department at the University of Alberta.

Kootenay Convention.—Creston was the site of the spring convention of the Kootenay Dental Society. Despite icy road conditions, members attended from Grand Forks, Trail, New Denver, Nelson and Cranbrook.

During the morning, association and college reports were received from H. G. Steed and W. N. Fraser respectively. Special interest was shown in the encouraging developments toward establishing a dental school at the University of British Columbia. The Kootenay dentists made plans to take active steps in the recruiting of dental students in their section of the province.

A presentation on preventive orthodontics was given by William Gregorak, formerly of Rossland, B.C. and now practising in Spokane, Washington.

Vancouver and District Dental Society.—At the last meeting of the season held on May 1, D. S. Munroe, M.D., Vancouver cardiologist spoke on "A Bird's-eye View of Heart Disease, 1962". The presentation covered methods of diagnosis, types of heart disease, treatment and prevention. The many questions asked at the close of the lecture indicate a real interest in heart disease as it affects the dentist and his patients.

Gifts of appreciation were presented to retiring president C. W. Gardner and K. R. Mc-

Williams, who has acted as door secretary for many years.

New officers for the next season will be: R. E. Cline, president; R. K. Lindsay, president-elect; C. W. Gardner, past president; A. A. Fraser, secretary; S. R. Moscovich, F. A. Mitchell, J. A. Folkins and R. J. Dent, directors.

MANITOBA

Winnipeg Dental Society. — The Winnipeg Dental Society concluded its 1961-62 clinical program on April 9 when E. O. Thompson of Salt Lake City, Utah, delivered two papers on "Accelerated Efficiency in the Dental Office" and "Application of the Washed Field Technique". Dr. Thompson originated the "washed field" technique and the "canister-tray" concept and was merit award winner of the Northwestern University Alumni Association last June.

Illustrating his papers with slides and motion pictures, Dr. Thompson presented a new concept of maximum efficiency with minimum energy output which improves the quality as well as the quantity of services rendered in the dental office.

Attending the meeting as guests of the Winnipeg Dental Society were members of the Winnipeg Dental Nurses' and Assistants' Association. The luncheon meeting was brightened by the presence of the dental nurses. The graduating class of twenty-eight assistants were presented with certificates and pins attesting successful completion of the third winter course leading to certification as qualified dental assistants. Highest honours went to Miss Sandra Humes, Miss Maureen Klassen, and Miss Roselle Lazaruk.

Election of new officers of the Winnipeg Dental Society resulted in the installation of the following members: R. E. Wallace, president; J. Scott Norquay, vice-president; T. Goldberg, clinic chairman; and D. B. Proctor, secretary-treasurer. Named as committee members were M. J. Snidal and S. M. Borden.

ONTARIO

Dental Groups Submit Brief to Royal Commission on Health Services.—A brief submitted by the Royal College of Dental Surgeons and the Ontario Dental Association to the Royal Commission on Health Services on May 28, contained these significant recommendations:

1. Immediate establishment of a second dental school in Ontario, costing approximately \$4 million.

2. A detailed study of recruitment to the health professions, to be undertaken by the Commission.

3. A provincial subsidization program in order to encourage students from rural areas to obtain dental training and subsequently practise in a rural area. It was estimated that \$30,000 per year would subsidize ten students in each of the first three years of the undergraduate curriculum.

4. An increase in federal grants to universities in order to bring about a reduction in academic fees.

5. Amendment of the Ontario Fluoridation Act so as to make communal water fluoridation mandatory. Federal-provincial financial assistance to communities which fluoridate their water was also suggested. The annual cost of fluoridation in Ontario was estimated at \$400,000.

6. Extension of dental public health programs comprising educational, diagnostic and referral services for preschool and young school children. The annual cost of a province-wide program was estimated at \$1 million.

7. Pilot studies and operational research by dental schools to determine the most effective utilization of auxiliary personnel in private and public health practice. A federal grant of \$50,000 was requested to initiate such research.

8. Establishment of dental departments in all public general hospitals in communities where dental personnel is available, and the appointment of dentists to hospital staffs. Such dentists should have the right to admit patients on the same priority basis as admissions for other generally elective treatment service, the necessary medical assessment of patients being arranged with the medical staff.

The brief also recommended tax relief on dentists' expenditures incurred by attendance at postgraduate or refresher courses conducted under the auspices of universities or recognized dental societies.

Other recommendations dealt with measures to increase the supply of dental teachers and research workers; provincial-municipal funds in support of university dental school clinic facilities; increased training facilities for dental specialists; financial aid to students; financial support for dental research; improved salaries for public health dentists; federal machinery to maintain annual compilation of the Canadian dental health index; a nation-wide study of factors influencing the demand for dental care; the training of dental hygienists, assistants and technicians; training dental students in the use of assistants; out-patient dental services to provide dental care for persons in marginal income groups; establishment of more cleft palate research and treatment centres; and expansion of the

Ontario Dental Welfare Plan so as to encompass all beneficiaries of the provincial welfare department ultimately.

Rural communities wishing to attract a resident dentist were urged to provide an equipped dental office and guarantee a minimum income for dental service to children, permitting the treatment of adult patients on a fee for service basis. It was suggested that the dental division of the provincial health department in co-operation with provincial dental authorities consider applications from municipalities seeking dentists and that costs be shared between the province and the municipalities involved.

The provincial health department was also urged to expand dental services in sparsely populated regions by employing more traveling dentists and providing more railway dental clinics, dental trailers and transportable dental equipment.

Toronto Endodontic Study Club. — H. J. Healey, chairman, Division of Endodontics, Indiana University School of Dentistry addressed members of the Toronto Endodontic Study Club at the final meeting of the current season on March 14. This took the form of an all-day presentation.

Dr. Healey described some of the reasons for failure of endodontic treatment. These include incomplete obliteration of root canals, lack of ability or confidence on the part of the dentist, or indifference. Proper selection of cases, an aseptic technique, proper instrumentation, thorough root canal obliteration and subsequent radiographic follow-up examinations were described as the ingredients of successful endodontic therapy. Dr. Healey did not give undue emphasis to any particular treatment technique. A treatment technique must be compatible with fundamental principles of good endodontics, Dr. Healey stated.

QUEBEC

Quebec Dental Groups Advocate Fluoridation. — Provincial governments should take swift action in the matter of water fluoridation, the Royal Commission on Health Services was told April 12 in Montreal. R. M. LeBlanc, registrar-secretary of the College of Dental Surgeons of the Province of Quebec, said governments should not leave it to the public to decide whether communal water supplies are to be fluoridated.

Support for the measure also came from the Mount Royal Dental Society, which recommended provincial and federal assistance to help municipalities pay the expenses of installing fluoridation equipment.

Two other dental groups — the Montreal Dental Club and La Société Dentaire de Montréal — advocated fluoridation in briefs presented to the Commission the preceding day.

The College of Dental Surgeons of the Province of Quebec also advocated a dental care plan for some 90,000 children below age sixteen who are under the auspices of the provincial social welfare department. Dental care would be rendered by private practitioners according to a schedule of fees mutually agreed to by the provincial government, the College of Dental Surgeons and the Board of Dental Services of Quebec, the latter two groups assuming responsibility for administration of the plan, and the former allocating the necessary funds through its Department of Social Welfare.

Mount Royal Dental Society. — The annual D. P. Mowry Memorial Lecture was held at the Montreal General Hospital, March 3. G. Baer, president of the Mount Royal Dental Society, presided at the meeting. The guest lecturer was Frank Wentz, professor of Periodontics at Loyola University, Chicago and an associate of the late Dr. B. Orban. Discussing the "Correlation of Periodontics and Operative Dentistry", Dr. Wentz demonstrated the close interrelationship between the various aspects of diagnosis and treatment procedures. Excellent slides were shown illustrating stabilization of teeth, removal of infectious substances by thorough scaling, and healing of the areas involved. Dr. Wentz stressed that a small amount of inflammation, existing for an extended period of time, can later result in considerable bone loss.

In the afternoon the speaker explored the principles involved in the preparation of the mouth from a periodontal and mechanical viewpoint. Particular emphasis was directed to scaling, home care instruction, and restoration of contact, contour and embrasure space. Stating that time is necessary in assaying a case in order to judge the tissue response, Dr. Wentz added that the cure is sometimes not worth the deformity which remains. The presentation was followed by a lively question and answer period.

Montreal Dental Club.—The Montreal Dental Club met on April 16 at the Queen Elizabeth Hotel for a regular monthly meeting. After a brief business session, F. O. Frederick, president, introduced R. F. Harvey, the guest essayist. Dr. Harvey, a member of the club, is also lecturer in Periodontics at the Faculty of Dentistry, McGill University.

Selecting as his topic, "Differential Diagnosis in Periodontia", Dr. Harvey reviewed

the sequence of case management beginning with diagnosis, prognosis, and treatment planning. "It is in arriving at a diagnosis that the dentist can evaluate the total patient and determine what systemic factors may enter into the equation:

systematic substrate x exciting factor
 → observable evidence of disease",

the speaker stated. Also discussed were systemic influences such as stress, circulatory influences, and pancreatic, thyroid and other hormonal influences.

International Items

AUSTRALIA

New Support for Fluoridation.—The National Health and Medical Research Council of Australia has reversed a nine-year stand and now advocates water fluoridation for all communities. In 1953, the Council stated that there should be solid community support—or at least a lack of opposition — before fluoridation was adopted. In a recent meeting, the Council noted "that fluoridation of public water supplies has been shown in a number of countries to result in a significant reduction in dental caries in the population supplied, and that the procedure is safe. The Council recommends that public authorities give early consideration to the necessity for fluoridation of their water supplies."

UNITED STATES

World-wide Health Education Conference Set for Philadelphia. — Health and education leaders from a hundred nations will convene in Philadelphia, July 4, for the first International Conference on Health and Health Education. The purpose of the conference is to examine the current status and trends of major world health problems. The conference, sponsored by the International Union for Health Education, with headquarters in Paris and Geneva, will be conducted in four languages, with simultaneous interpretation into French, Spanish, Russian and English. Further information may be obtained from the Canadian representative, Mr. M. E. Palko, Health Educator, Department of National Health and Welfare, Ottawa, Ontario.

Canadian Dental Schools

STUDENT ENROLLMENT INCREASES

More dental and dental hygiene students are enrolled in Canadian dental schools this year. According to the Canadian Dental Association's *Dental Students Register* 1,052 dental students are attending the four dental years of the six schools, 226 in the graduating classes. The total enrolment figure is 15 per cent higher than a year ago.

Dental hygiene programs have 85 students at three schools — the University of Alberta, the University of Toronto and Dalhousie University. The Alberta and Dalhousie courses are in their first year of operation. When total capacities of the three programs are reached, 92 hygienists can be trained in each of the two years of the course. There are fewer than one-hundred dental hygienists in practice in Canada now.

UNIVERSITY OF TORONTO

Staff Members Attend Scientific Meetings.—R. A. Erickson, A. Posen and D. G. Woodside attended the annual meeting of the American Association of Orthodontists in Los Angeles, April 29 to May 3, 1962. Dr. Woodside gave a clinic on "Cephalometrics as an Aid in Teaching Growth and Development to Undergraduate Dental Students." He also led a round-table discussion on "Excessive Free-way Space."

G. Nikiforuk participated in a panel discussion on "Some Aspects of Minerals in Nutrition" conducted by the Nutrition Society of Canada in Quebec City on June 9. G. A. Morgan will present a scientific paper at the First International Conference on Oral Surgery in London, England. July 1-4.

Summer Undergraduate Studentships Awarded. — Nine summer undergraduate studentships have been awarded in the Faculty of Dentistry this year—six by the National Research Council of Canada and three by the Canadian Dental Association. The National Research Council studentships go to three third-year and three second-year students. J. K. Bambha, B. L. Pedlar and T. Williams are the recipients of Canadian Dental Association studentships.

Box Memorial Lecture Scheduled.—The first Harold Keith Box Memorial Lecture has

been scheduled for Monday, October 15, 1962, at 8.15 P.M. in the auditorium of the dental building of the Faculty of Dentistry. Harry Sicher, a world authority on the role of bone in periodontal disease, will be the guest lecturer. Dr. Sicher was formerly professor of anatomy at Loyola University School of Dentistry, Chicago. He is the author of *Oral Anatomy* and the co-author of the text, *Bone and Bones*. During his distinguished career Dr. Sicher has been closely associated with research concerning the problems of periodontal disease.

Staff Members Participate at Ontario Scientific Meetings.—Staff members who participated on the program of the recent meeting of the Ontario Chapter of the Canadian Society of Dentistry for Children included G. Nikiforuk, professor of Preventive Dentistry and chairman of the Division of Dental Research; R. Rapp; and J. A. Pedler, professor and head of the Department of Oral Diagnosis. The meeting was held at the Sheraton-Connaught Hotel, Hamilton, Ontario, on May 12.

Participants on the program of the annual convention of the Ontario Dental Association held at the Royal York Hotel, Toronto, May 13-16, included G. C. Hare, D. S. Moore, W. W. Pressey, A. A. Antoni, C. D. Torneck, D. G. Coburn, D. B. McAdam, A. W. Chapple, E. J. Rajczak, J. Z. Gajda, W. Fleming, C. Reynolds and D. W. Stoneman. A special feature of the program was the presentation of table clinics by two members of this year's graduating class, R. Weiler and H. Vogl, and by a graduate student, N. Levine.

Royal Canadian Dental Corps



Lt.-Col. P. L. Rondeau

Lt.-Col. S. G. Geldart

NEWS FROM HEADQUARTERS

Brigadier Baird Attends Meeting.—Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces attended a meeting of the editorial board of *Oral Health* magazine in Toronto on April 25.

Directorate of Dental Services in New Location.—The Directorate of Dental Services has moved to more spacious quarters in No. 8 Temporary Building on Carling Avenue, Ottawa, from "B" Building in Cartier Square, where it had been located for the past fifteen years.

OFFICERS ATTEND VARIOUS MEETINGS, COURSES

Colonel C. E. Purdy, Commandant, the R.C.D.C. School, visited Ottawa on April 27 to attend a meeting of the R.C.D.C. Stores Committee.

Colonel B. P. Kearney and Major T. D. Cobb attended the first annual convention of the Alberta Dental Association in Edmonton on March 29-30.

Major J. C. Brick of the Directorate Staff represented the Dominion of Canada Rifle Association at the annual convention of the National Rifle Association held in Washington, March 31 to April 5.

Major W. R. Thompson of the R.C.D.C. School staff is taking resident training in oral surgery at the Doctors' Hospital, Toronto.

COLONEL MILLAR CONDUCTS MILITIA COMPETITION

Colonel I. A. L. Millar, Director of Dental Services (Navy) recently returned from an inspection tour of R.C.D.C. Militia Units across Canada in connection with the Annual Militia General Efficiency Competition. The following units are taking part this year: No. 50 Dental Unit, Halifax; No. 51 Dental Unit, Saint John; No. 54 Dental Unit, Ottawa; No. 56 Dental Unit, Toronto; No. 57 Dental Unit, Winnipeg; No. 58 Dental Unit, Regina; No. 59 Dental Unit, Calgary; No. 60 Dental Unit, Edmonton; and No. 61 Dental Unit, Vancouver.

Lt.-Col. S. G. Geldart, Edmonton and Lt.-Col. P. L. Rondeau, Vancouver, Commanding Officers of No. 60 and 61 Dental Units respectively, two of the units taking part, are pictured.

CROWN AND BRIDGE CLINIC IN MIDDLE EAST

Dental officers from Yugoslavia, Brazil, Sweden and Denmark attended a crown and bridge clinic recently held by personnel of the Canadian Dental Detachment of the United Nations Emergency Force. Major E. J. C. Small, officer in charge of the detachment welcomed the officers and introduced the program which consisted of films and table clinics. After the meeting the visitors were guests of the Canadian dental officers for dinner at the officers' mess, Camp Rafah.

LT.-COL. TURNER'S TOUR WITH U. S. NAVY EXTENDED

Lt.-Col. J. W. Turner who has been serving on the staff of the U. S. Navy Dental School, Bethesda, Maryland, for the past year on an exchange basis, has been granted a one-year extension. Similarly Commander R. R. Troxel, U. S. Navy Dental Corps will continue on staff at the R.C.D.C. School, Camp Borden, for a like period.

TRANSFERS, RELEASES

Captain M. D. G. Conrad has been posted to the Canadian Dental Detachment, United Nations Emergency Force. He replaces Captain R. D. Bunt who has returned to Canada for employment at R.C.A.F. Station, Trenton, Ont.

Captain E. G. Baird has taken his release from the Royal Canadian Dental Corps to enter private practice in Campbellford, Ont.

ing, Veterinary Public Health, and Vital and Health Statistics sections. This meeting was devoted to a symposium on the subject, "Social Sciences and Public Health." G. T. Mitton, professor and head, Department of Dental Public Health, University of Toronto was a participant at this symposium.

The other joint meeting was held with the Public Health Education, Public Health Nursing, Maternal and Child Health, Medical Care, Mental Health, Public Health Nutrition, Occupational Health, and Vital and Health Statistics sections. This meeting took the form of a panel discussion on the subject, "More Effective Liaison between Community Health Services."

J. C. Bouillon, director of Dental Services, Department of Health, City of Montreal, was the speaker at the Dental Section meeting on May 28.



Miss Kate MacDonald

DEPARTMENT OF NATIONAL HEALTH AND WELFARE APPOINTS NEW DENTAL HYGIENIST

Miss Kate MacDonald, dental hygienist, joined the Dental Health Division of the Department of National Health and Welfare in October 1961, according to a recent announcement from Ottawa. A native of Prince Edward Island, Miss MacDonald graduated from Prince of Wales College in Charlottetown and from the Forsyth Dental Infirmary's School for Dental Hygienists in Boston. She served for three years with the Prince Edward Island Department of Health and was later employed in a periodontal practice in Ottawa and a general practice in Halifax before receiving her present appointment.

Public Health

ONTARIO PUBLIC HEALTH ASSOCIATION DENTAL SECTION MEETS

Two joint section meetings and one meeting of the Dental Section alone were held when the Ontario Public Health Association met in Toronto, May 28-31.

One joint section meeting was held with the Environmental Hygiene, Public Health Education, Medical Care, Mental Health, Public Health Nutrition, Public Health Nurs-

BOOK REVIEWS

NATIONAL HEALTH GRANTS, 1948-1961

*Canada, Department of National Health
and Welfare. Ottawa, Queen's Printer, 1962
223p. Mimeo.*

The reader will be impressed by the various integrated activities that have been co-ordinated between the federal and provincial governments in the administration of the National Health Grants.

The dentist and his co-workers will appreciate the impact of National Health Grants upon dental public health on finding that 63 dentists and 56 dental hygienists have received financial aid while acquiring formal public health training.

The chapter, "Professional Training" has a most reassuring inference in that new developments in public health will likely require refresher courses for public health personnel and that continued financial support might be possible for this purpose.

The chapter, "Dental Health" is somewhat disconcerting and misleading.

Page 95 gives the impression that only British Columbia has a concentrated dental program for the preschool child. There is no mention of the earlier preschool programs in Ontario. The "Riverdale Preschool Dental Project" in Toronto, for example, was initiated and supported during its first five years (1955-60) with the aid of National Health Grant funds.

Page 96 suggests that a statistical method for determining the prevalence of dental conditions was first used in British Columbia and subsequently adopted by all provinces! Although formally tested in British Columbia under National Health Grant assistance, this method was used in Ontario as early as 1954 where it was originated by professor R. M. Grainger of the Faculty of Dentistry, University of Toronto. Grainger's work with the provincial health department and health units in Ontario preceded the official evaluation in British Columbia by several years.

Paragraph 3 on page 96 also refers to "a kind of dental service" which has been instituted in certain local health units in Ontario. Alternative terminology might have been more fitting since Ontario health unit dental programs have long devoted major emphasis

to preschool children, the key group in any community dental health program.

In the same paragraph, the statement "in some health units a dental hygienist performs the services of a public health dentist" is incorrect. While the dental hygienist performs important duties under the direction of the public health dentist, she does not and cannot "perform the services of a public health dentist". The role of the dental hygienist in public health is more clearly outlined in the chapter dealing with "Local Health Services" (page 49). Here it is pointed out that due to a lack of properly trained dental public health personnel "a number of local health departments have been able to institute programs of dental health education and counselling through the use of dental hygienists and a system of regionalization whereby one public health trained dentist supervises the program of two or more health units". This reviewer wholeheartedly endorses this statement and looks forward to the widespread extension of regional dental public health programs directed by formally trained public health dentists and staffed by dental hygienists.

Despite criticism of the chapter on "Dental Health", this publication affords the reader a comprehensive summary of the history and development of National Health Grants over the 13-year period 1948-61. The concluding tables point out the enormous sums of money expended to date. This publication cannot help but stimulate the reader to think in terms of future needs.

H. S. Grey

ROENTGENOGRAPHIC CEPHALOMETRICS

*J. A. Salzmann. Philadelphia and Mont-
real, J. B. Lippincott Co., 1961. 195p. Illus.
\$4.75*

This book is a record of the proceedings of the Second Research Workshop on Roentgenographic Cephalometrics conducted by the Special Committee of the American Association of Orthodontists. As such it is a sequel to the report on the First Workshop held in 1957.

The Second Workshop consisted of a large and authoritative group of research workers

in cephalometrics, orthodontics and closely related fields in addition to the members of the Committee. Consultants included anatomists and anthropologists. The participants were divided into groups and subgroups, each of which considered a specific problem previously assigned to it and on which a preparatory study had been made by the members of the group. Such problems as the objectives of cephalometric analysis, methods of superimposing tracings, technique of taking cephalograms, equipment, hazards of radiation, accuracy and stability of anatomical landmarks, etc. were studied with their clinical application.

The book records the progressive and final reports made by the moderator of each group, the discussion by the participants of the workshop and the decision taken on the report. Included also are ten extensive statements by group members and consultants. These are really short articles on such subjects as "Some Criteria in Roentgenographic Cephalometrics" by Anders Ljunstrom, "Present Problems in Applied Cephalometrics" by R. M. Ricketts, and other short articles on the problems under discussion. These statements are very clear and add much to the informative value of the book.

The book is important not only as a record of the proceedings of the Second Workshop but as a crystallization of the thinking of leading workers in cephalometrics. It points out some of the major problems and the efforts in solving them. Both the clinical orthodontist and the research worker will find it interesting, stimulating and helpful.

Gerald Franklin

THE RELUCTANT SURGEON

John Kobler. New York, Doubleday, 1960. 359 p. \$4.95.

The freak felt a tremor of fear and horror run through him as he noticed the man at the back of the show booth. It was a man he had seen following him for days on end. True, he knew that the watcher had no designs on his life. The freak was 8'4" tall. His hands measured 14 inches from wrist to middle finger and he could look after himself. What really worried him was the thought of what might happen after his death. Earlier the watcher had brought an offer from a West End surgeon who wanted the freak's corpse. But the celebrated Charles Byrne, though aware that he would soon die from tuberculosis and alcoholism, did not want to assign his giant gin-sodden body to anyone. That was why he had ordered an expensive lead coffin, and hired a team of fellow Irishmen to tow it to the mouth of the Thames and sink it beyond the reach of any scalpel.

But the plans of mice and men — and giants too — can go awry. The faithful guardians of the corpse, after sharing a substantial bribe, carried it directly to the surgeon's cab waiting in the street. Who was this surgeon? No one so respectable as Brock or Weir, leaders in their time. But they would be the first to concede that he was greater than either of them — greater, perhaps than any other surgeon in British history.

He was John Hunter, born 1728, the subject of a new biography, *The Reluctant Surgeon* by Kobler. The story of Hunter's avid quest for poor Byrne helps to explain his greatness.

Unlike his pupil Jenner, Hunter has few dramatic discoveries to his credit. Yet his ceaseless probing of the fabric of life itself made him a founder of scientific surgery. At his Leicester Square town house his wife's guests had to pick their way to her musical evenings through rows of bottled specimens. At his country home he kept a menagerie of tigers, lions and specially bred freak animals. Hunter's is not the usual success story. Like so many pioneers in medicine, he came from a farm in Scotland but he was not a bright boy, and he passed no examinations. While his elegant elder brother William was already prospering as a medical man in London, John — squat, red-headed and surly — was working as a cabinet maker's assistant in Glasgow. When the cabinet maker went bankrupt John went to work for his brother collecting corpses for his brother's medical school. At that time only the bodies of hanged criminals were legally available for the dissecting tables. Prosperous schools needed a steady supply of bodies and young John proved a brilliant supplier. His eye already kindled with medical curiosity could spot what were to be the interesting specimens before they were actually dead. Thus for John, learning and business began to go hand-in-hand and soon his knowledge of the human body was so extensive that he was admitted as a surgeon's pupil to St. George's Hospital. He learned how the human body can often heal itself without the knife. He became the "Reluctant Surgeon". But he never became a scholar. His written notes were muddled and ungrammatical. Years later, Darwin, reading one passage from them, noted that in the maze of confused verbiage, Hunter had anticipated the basis of his own theory of evolution. Hunter's influence was spread not through ordinary books, but through his great book without words, his collection of specimens, and through his continual experiments.

This man played a part in the evolution of dental science too. During the 18th century dentistry ranked lowest among the healing arts. The author most vividly describes the chaos existing at that time. Medical men

were loath to refer a patient and seldom had direct dealing with a dentist. When dental care was unavoidable they would send the patient with written instructions to some practitioner whom they felt to be at least honest. One such man, Spence, received a large percentage of the London referrals since he at least practised with a modicum of dignity and no ostentation. Due to financial difficulties Hunter decided to ally himself with the Spences as a consultant and dental practitioner, after the elder Spence, seeing the need for a surgical consultant at hand, suggested the arrangement. This relationship lasted five years, three mornings a week and had a direct bearing on the development of dentistry as a science. With his natural drive for knowledge Hunter found time to write the first scientific treatise on dentistry in English and this was the most extensive work in any language at that time. Behind this two volume *Natural History of the Teeth* lay a comparative study of nearly every species in the animal kingdom growing teeth. Hunter detailed and favoured the transplantation of

teeth but he was a little premature. Later one of Hunter's pupils joined the staff of Guy's Hospital as dental surgeon.

Much of Hunter's collection survived the bombing in the last war. Items have been preserved and are on display in the Royal College of Surgeons, Lincoln's Inn, London. There, one can see the skeleton of the unfortunate Byrne, all 8'4", in a huge glass case, as well as a life size statue of Hunter in the Main Hall. In a life dedicated to research, one of Hunter's experiments was as catastrophic as it is amazing. It took place while he was leading the attack on the scourge of the ages, venereal disease. On the verge of marriage in a mistaken and overconfident experiment, he deliberately infected himself with syphilis. He reported that he quickly cured it. He did not realize that his own children were probably affected. A bitter and ironical ending to the path which led from the bankruptcy of a Glasgow cabinet maker to a place in medical and dental history.

J. V. P. Chatwin

ADDITIONS TO THE LIBRARY

AMERICAN DENTAL ASSOCIATION. COUNCIL ON DENTAL RESEARCH. Guide to dental materials, 1962-1963. Chicago, 111 p. illus. \$2.50.

BARD, A. T. Precision attachment restorations. (Practical Dental Monographs, March 1962.) 29 p. illus.

BLAKE, G. C. and TROTT, J. R. Periodontology. London, Butterworths, 1962. 224 p. illus. \$10.00.

CRABB, H. S. M. and DARLING, A. I. The pattern of progressive mineralisation in human dental enamel. New York, Pergamon Press, 1962. 98 p. illus. \$5.50.

DENTAL CLINICS OF NORTH AMERICA, March 1962. Symposium on occlusion. James V. Giordano, consulting editor. Philadelphia, Saunders, 1962. 287 p. illus.

DUNNING, J. M. Principles of dental public health. Cambridge, Mass., Harvard University Press, 1962. 543 p. illus. \$12.10.

FOWLER, E. H. Heinemann modern dictionary for dental students. London, William Heinemann Medical Books Ltd. 364 p. illus.

JEWKES, J. and JEWKES, S. The genesis of the British National Health Service. Oxford, Basil Blackwell, 1962. 68 p. \$1.00.

LOWRY, A. and HARROW, B. An introduction to organic chemistry. 7th ed. New York, John Wiley & Sons, Inc. 1951. 480 p. illus. \$6.55.

MICHIGAN UNIVERSITY. SCHOOL OF PUBLIC HEALTH. Handicapped children; problems, programs, services in Michigan. Ann Arbor, University of Michigan, 1961.

NAGLE, R. J. and SEARS, V. H. Denture prosthetics; complete dentures. 2nd ed. St. Louis, Mosby, 1962. 516 p. illus. \$11.75.

ROBERT, Gen. H. M. Robert's rules of order revised. Seventy-fifth anniversary edition. Toronto, The Ryerson Press, 1951. 325 p. \$2.50.

THE ROYAL COLLEGE OF PHYSICIANS OF LONDON. Smoking and health; a report of the Royal College of Physicians on smoking in relation to cancer of the lung and other diseases. Toronto, Pitman Publishing Corporation, 1962. 70 p. tables

SICHER, H. Orban's oral histology and embryology. 5th ed. St. Louis, Mosby. 406 p. illus. \$10.50.

U.S. NATIONAL RESEARCH COUNCIL. Committee on Pathology. Atals of tumor pathology, Section III — Fascicule 9, Teratomas by Rupert A. Willis, published by the

Armed Forces Institute of Pathology under the auspices of the Subcommittee on Oncology of the Committee on Pathology of the National Research Council. Washington, 1951. 58 p. illus. \$1.25.

WRIGHT, C. R., SWARTZ, W. H. and GODWIN, W. C. Mandibular denture stability; a new concept. Ann Arbor, The Overbeck Co., 1961. 55 p. illus. \$2.75.

THE YEAR BOOK OF DENTISTRY, 1961-1962. Chicago, Year Book Publishers, 1962. 463 p. illus. \$8.00.

IN MEMORIAM

FRANK AMOS GODSOE — Dr. Frank Amos Godsoe of Hampton, New Brunswick died on February 20, 1962. He was 100 years old. Dr. Godsoe was born in Saint John, New Brunswick on January 15, 1862. After receiving his early education in that city, he attended Boston Dental College (Tufts University), graduating in 1883. After a year of practice in Boston, Dr. Godsoe returned to Saint John. During the first war he was officer in charge of the dental clinic in the Saint John Armouries. His responsibilities extended to dental services in hospitals at Fredericton, Jordan Memorial Hospital at River Glade, the Provincial Hospital at West Saint John and the Tuberculosis Hospital at East Saint John. Over a period of forty years Dr. Godsoe served as registrar of the Council of Dental Surgeons of New Brunswick and secretary-treasurer of the New Brunswick Dental Society. Dr. Godsoe contributed to the enactment of New Brunswick's first dental act in 1890. He attended the organizational meeting held in September 1902 at Montreal which resulted in the formation of the Canadian Dental Association. In 1934, on completion of fifty years of practice in the province, Dr. Godsoe was made an honorary life member of the New Brunswick Dental Society. At St. Andrews, New Brunswick, in 1954, Dr. Godsoe received an honorary membership in the Canadian Dental Association.

He is survived by one niece, Miss Dorothy Godsoe of Hampton, New Brunswick.

HERBERT FRANKLIN CHRISTIE — Dr. H. F. Christie of Winnipeg, Manitoba died on April 14, 1962. He was 83. Dr. Christie was born in Ste. Agathe, Manitoba in 1879. He studied at Northwestern University, Chicago, graduating in 1903. He was at one time registrar and secretary-treasurer of the Manitoba Dental Association. Surviving are his sons; Dr. Robert S. Christie, Dr. John A. Christie, Dr. Glenn A. Christie and Norman C. Christie, all of Winnipeg; a brother, Gordon Christie of California and eleven grandchildren.

KENNETH MCKINLEY COONS — Dr. Kenneth McKinley Coons of Moose Jaw, Saskatchewan died on March 3, 1962. He was 61. Dr. Coons was born in Inkerman, Ontario in 1901. He graduated from the Royal College of Dental Surgeons in 1924. Surviving are his sons, Donald and Kenneth Coons of Moose Jaw; six grandchildren; sisters Mrs. W. S. Hooper (Belle) of Prince Albert, Mrs. P. G. Wright (Flora) and Mrs. H. J. Scott (Annie May) of Vancouver; brothers R. Earl Coons of Saskatoon and Lloyd Coons of Aberdeen, Washington, U.S.A.

EDWARD ELKAN — Dr. Edward Elkan of Montreal died in February, 1962. He was 80. Born in New York City in 1882, Dr. Elkan studied dentistry at the University of Bishops College, Province of Quebec. He graduated in 1905.

FREDERICK GEORGE GARVIN—Dr. Frederick George Garvin of Portage la Prairie, Manitoba died on March 25, 1962. He was 71. Dr. Garvin was born in Saltcoats, Saskatchewan in 1891. He attended the Royal College of Dental Surgeons of Ontario and graduated in 1916. He served with the Canadian Dental Corps during the first world war. Dr. Garvin practised in Canora, Saskatchewan from 1920 until 1943, when he moved to Portage la Prairie, Manitoba. He practised there until recently. He is survived by his wife; son, Robert Garvin of Toronto and a daughter, Mrs. Kay Longrigg, of Brandon.

VAN ROWLAND HILL — Dr. Van Rowland Hill of Wilkie, Saskatchewan died on March 21, 1962. He was 63. Dr. Hill was born in Rounthwaite, Manitoba in 1898. He graduated from the Royal College of

Dental Surgeons of Ontario in 1924, and practised for short periods in Watrous and Viscount, Saskatchewan. Dr. Hill subsequently set up practice in Wilkie. He is survived by his wife, Merle; daughters, Marilyn and Sharon; and son, Byron.

ARTHUR AUSTIN HOLLISS — Dr. A. A. Holliss of Calgary, Alberta died on September 27, 1961. He was 77. Born in Brampton, Ontario, Dr. Holliss attended the University of Michigan, graduating in 1911.

ROLAND LASALLE—Le Dr Roland LaSalle de Montréal, âgé de 61 ans, est décédé le 22 avril 1962. Il était né à Montréal en 1900. Le Dr LaSalle obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1925. Il était lieutenant-colonel dans le Corps dentaire royal canadien.

AIME MAHER — Le Dr Aimé Maher de Montréal, âgé de 64 ans, est décédé le 18 avril 1962. Il était né à St-Thimothée, P. Qué. en 1898. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1924. Le Dr Maher était à sa retraite depuis 1956.

ATLANTIC PROVINCES DENTAL CONVENTION DIGBY PINES, N.S. JUNE 21-23, 1962

Capt. T. R. Humley
U. S. Navy Dental Corps

Biological Considerations in Operative Dentistry
Modern Techniques in Operative Dentistry

Dr. Cyril Gaum
Tufts University

Non-surgical Endodontics
Surgical Endodontics

Dr. John Findlay
Dalhousie University

A General Practitioner's Responsibility in the
Diagnosis of Periodontal Disease

Problems Encountered in the Treatment Planning of
Periodontal Disease

Dr. Claude Baril
Université de Montréal

Mixed Dentition Analysis and Serial Extraction

Dr. H. M. Eaton
Dalhousie University

Differential Radiographic Interpretation

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1962	Vancouver, British Columbia	June 3-6
1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2

1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)
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FUTURE EVENTS

Date	Function	Location	Officer	Address
June 21-23, 1962	Atlantic Provinces Dental Convention	Digby Pines Hotel, N.S.	Dr. D. C. Eaton	Farquhar Bldg., Halifax, N.S.
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20, 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.I., Eng.
July 16-18, 1962	Symposium on Psychodontics	Villa Olmo, Como, Italy	Dr. B. Acht	Piazzetta Um- berto Giordano 2, Milan, Italy
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Bldg., Prince Albert, Sask.
Sept. 7-9, 1962	Northern Ontario Dental Association Convention	Empire Hotel Timmins	Dr. J. Shaw	137b 3rd Avenue, Timmins, Ontario
Sept. 19-22, 1962	IIIrd Congress of the Yugoslav Dental Association	Ljubljana, Yugoslavia	Dr. V. Krusic	2 Zaloska, Ljubljana, Yugoslavia
Sept. 23-25, 1962	Eastern Ontario Dental Association Convention	Chateau Laurier Hotel, Ottawa	Dr. J. Berman	226 O'Connor Street, Ottawa, Ontario
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Quebec
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Super- ior Street, Chicago, Ill.
19-25 novem- bre, 1962	XXXVies Journées den- taires internationales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre- Haret, Paris 9e, France
Nov. 22, 1962	Academy of Dentistry, Toronto, Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario

POSTGRADUATE AND REFRESHER COURSES (CANADA)

ALBERTA—A postgraduate course in **AMALGAM RESTORATIONS** will be offered at the Faculty of Dentistry, University of Alberta, October 9-11, 1962. This course will include illustrated lectures on amalgam as a restorative material, cavity preparations, matrices and pin reinforced amalgams. One half day will be spent in the laboratory perfecting cavity preparations. The balance of the time will be devoted to restorative treatment for patients. The course will be directed by Dr. G. H. Gibb. Tuition fee \$60.

Enquiries and applications should be directed to the Secretary, Faculty of Dentistry, University of Alberta, Edmonton, Alberta.

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institutions.

L'Association Dentaire Canadienne.

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JOURNAL

La digue . . . pourquoi pas?

par ROGER GRÉGOIRE, D.D.S., Montréal, P. Qué.

La dentisterie opératoire, comme les autres secteurs de la chirurgie dentaire, accuse, depuis une dizaine d'années, des modifications importantes qui ont facilité son rendement.

Les turbines à haute vitesse et les pompes à succion rapide, inconnues il y a vingt ans, sont maintenant à la portée de tous les praticiens.

La dentisterie opératoire a la réputation d'être plus fatigante et plus harassante que les autres domaines de notre

profession. Si un dentiste consacre une journée entière à la dentisterie opératoire, il se dira, en sortant de son cabinet: "Une journée de fou!" Aussi se trouve-t-il heureux d'entremêler son travail de quelques empreintes pour des prothèses, de quelques essayages ou de quelques extractions.

Eh bien! je veux essayer de vous convaincre qu'il y a moyen de rendre la dentisterie opératoire moins fatigante, plus agréable et plus rémunératrice (pour ceux que le côté financier intéresse).

Nous verrons comment la digue peut:

- (1) nous permettre de sauver du temps;
- (2) rendre notre travail plus agréable et

Conférence prononcée au Congrès de l'Association dentaire de la province de Québec, tenu à Sherbrooke, les 25 au 27 mai 1961.

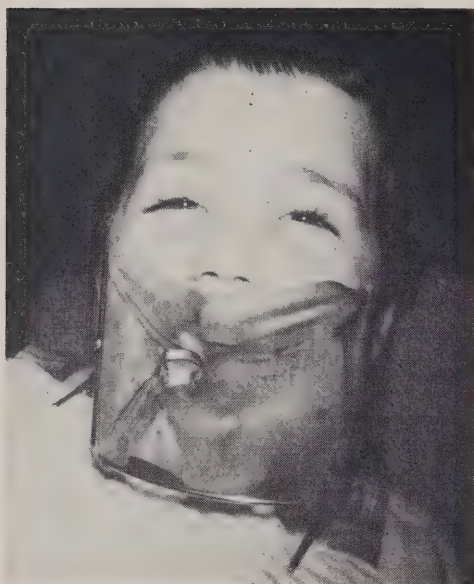


FIGURE 1 Atmosphère de détente et même... de gaieté, en pédodontie.

moins fatigant; (3) nous faire réussir de meilleures obturations. Enfin, nous considérerons (4) la réaction des patients devant la digue.

LA DIGUE SAUVE DU TEMPS

La digue épargne du temps tout au long d'une séance de dentisterie opératoire, durant le fraisage de la cavité, l'ablation de la carie et l'insertion de la substance obturatrice.

Cette affirmation tient du fait que, d'un côté, il faut au plus 1 à 2 minutes pour installer la digue (dans la plupart des cas, spécialement chez les enfants, une minute suffit) (Figure 1). Pendant six mois, cette constatation a été vérifiée à l'aide d'un chronomètre.

Une fois la digue installée, l'on récupère bien vite, par contre, ces deux minutes et beaucoup plus, comme je vais essayer de le démontrer.

Ce qui rend difficile la démonstration de cette épargne de temps que représente l'emploi de la digue, c'est que l'on calcule immédiatement et facilement le temps employé pour l'installer (ce temps se trouve limité dans une seule opération); tandis que le temps sauvé, par ailleurs, ne nous apparaît pas facilement, parce qu'il se trouve réparti et caché tout au long de la visite du patient, par bribes de 5, 10 et 15 secondes.

Il faut, pour se faire une idée juste du temps épargné, considérer dans leur ensemble une foule de détails, qui, pris un à un, peuvent paraître insignifiants.

Cracher une fois ne prend pas de temps; cracher dix fois prend dix fois plus de temps.

Se rincer une fois ne prend pas de temps, ni changer de rouleaux de coton, ni remplir un verre d'eau, ni remettre ou nettoyer la pompe à salive, ni essuyer le miroir, ni ajuster la lumière ou l'appui-tête, ni dire quelques mots au patient, ni éponger un peu de sang, ni ramasser les surplus d'argent dans le vestibule de la bouche.

Mais la multiplication de tous ces détails par 4 ou 5 fois et par le nombre de patients traités dans une journée fait ouvrir les yeux d'étonnement sur la somme de temps perdu pour des faits et gestes inutiles.

FRAISAGE

La première opération consiste dans le fraisage de la cavité. Que se passe-t-il avec le bénéfice de la digue? Au lieu d'être intermittent, le fraisage peut se faire sans aucune interruption, car le patient ne crache pas une seule fois.

Le praticien, n'ayant pas à craindre les réactions du patient devant une accumulation d'eau ou de débris, se concentre mieux sur son travail et, par conséquent, l'exécute plus rapidement.

L'œil s'adapte à l'intensité de lumière du champ opératoire et l'opérateur profite de cette adaptation pour tailler deux, trois, quatre cavités, sans même arrêter la

fraise. Et ceci, quel que soit l'endroit où il travaille et quel que soit le genre de patient, enfant ou adulte, toujours prêt à avoir un haut-le-cœur.

Enlevez maintenant la digue; il semble qu'au fraisage s'ajoutent bien d'autres préoccupations.

L'eau est un problème et le patient doit cracher (les patients ne sont pas des réservoirs!).

Et souvent, le dentiste, en voulant travailler plus confortablement force le patient à cracher plus souvent.

Un exemple: la meilleure façon d'opérer sur les dents du maxillaire supérieur consiste à pencher le patient le plus en arrière possible, de manière à ce qu'il soit dans une position presque horizontale; le dentiste ainsi accède directement au champ opératoire sans l'aide du miroir. Cette méthode n'est pas possible sans la digue (à moins d'utiliser la turbine sans eau et cette technique n'est pas à conseiller), car l'eau et les débris s'accumulent rapidement dans la gorge et le patient doit cracher plus souvent.

Le voyage aller-retour au crachoir, si le patient est gros, grand et paresseux, est plus long et occasionne une perte de temps.

Dans le cas d'une femme enceinte, il faut relever un peu la chaise pour lui permettre un accès facile au crachoir.

Cracher, pour un enfant difficile, est un prétexte pour retarder les opérations et se payer une petite récréation.

Autant de détails qui s'accumulent et retardent le fraisage, qui empêchent toute concentration efficace.

Donc, la digue épargne du temps au dentiste durant le fraisage par le fait que le patient ne crache pas une seule fois: cet avantage permet une meilleure concentration pour effectuer le travail plus rapidement.

Le praticien n'a comme seul préoccupation que le champ opératoire et peut effectuer en même temps le fraisage de deux ou trois cavités.

L'œil prend quelque temps à s'adapter à l'intensité de la lumière du champ

opératoire et l'opérateur profite plus longtemps de cette adaptation.

ABLATION DE LA CARIE ET LE NETTOYAGE DE LA CAVITÉ

L'opération qui suit le fraisage consiste à enlever la carie et à finir la cavité.

Cette opération, en général, ne devrait pas être longue (elle ne l'est pas d'ailleurs avec la digue), mais, sans digue, plusieurs facteurs entrent en cause en occasionnant une perte de temps.

Ce sont les rouleaux de coton qui se déplacent et qu'il faut replacer; qui s'imbibent de salive et qu'il faut renouveler (le patient en profite habituellement pour se rincer et se permettre quelques réflexions). Il faut alors assécher la cavité et essuyer le miroir (deux opérations superflues qui se répètent plus ou moins souvent).

La gencive peut souffrir d'une petite hémorragie et ce saignement se prolonger (il est souvent difficile, durant le fraisage d'une paroi proximale, de ne pas faire un petit prolongement dans la gencive). Le peroxyde ou l'adrénaline entrent alors en jeu; sans digue, ces médicaments doivent toujours être à portée de la main.

C'est enfin le rinçage final, car la cavité doit être propre avant d'y insérer l'amalgame ou le silicate.

INSERTION DE LA SUBSTANCE OBTURATRICE

L'ablation de la carie terminée (pour ceux qui n'emploient pas la digue, on peut dire: l'ablation de la carie et les rinçages terminés), il faut obturer la cavité.

L'opérateur doit changer les rouleaux de coton (les glandes salivaires secrètent toujours trop); s'essuyer les doigts (car certains patients ont une salive visqueuse et collante); chauffer le miroir pour empêcher la buée de s'y former.

Parfois une lutte s'engage entre le miroir et la langue, celle-ci voulant absolument contribuer à la solidité de l'obturation, en venant déposer un peu de salive entre deux couches d'amalgame!

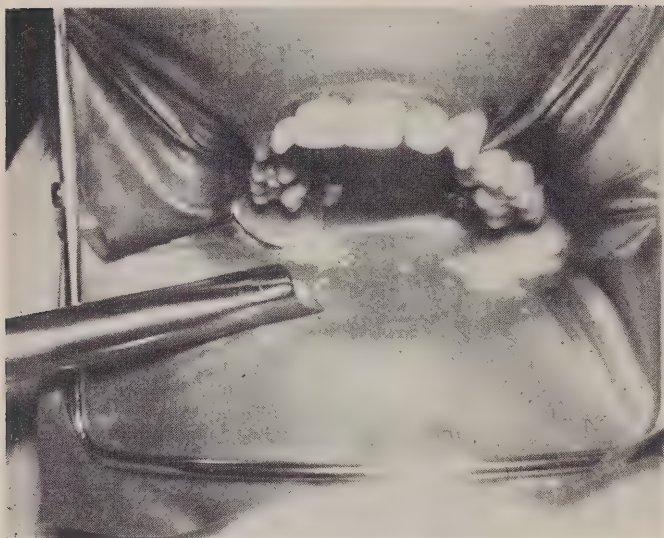


Figure 2 Les débris ne tombent pas dans la bouche du patient; ils sont évacués par la pompe à succion rapide.

L'amalgame est enfin sculpté et, une à une, les retailles tombent dans la bouche.

Elles vont se loger un peu partout: entre les papilles de la langue et sous la langue, entre les dents, dans les sillons des dents, partout où se trouvent déjà des débris de carie, des parcelles d'émail ou de dentine, des surplus de ciment, etc.

Il faut évidemment que le patient se rince pour se débarrasser de tous ces débris (Figure 2). On sait qu'il est parfois difficile de se rincer, surtout si la langue et la lèvre inférieure sont engourdies. Malgré toute sa bonne volonté et de grands verres d'eau, le patient n'en finit pas de mâchonner toutes sortes de choses qui ne lui appartiennent pas.

Il en reste toujours: il faut alors avoir recours à la méthode classique qui consiste à aller cueillir les débris dans les vestibules avec l'index!

La digue permet au dentiste, qui a deux salles d'opération et qui travaille d'un fauteuil à l'autre, de retrouver son patient exactement comme il l'avait laissé.

Il peut, ayant à obturer en amalgame une cavité de classe II, installer la matrice et se rendre à son deuxième fauteuil anesthésier un autre patient.

L'assistante, au signal du dentiste, prépare l'amalgame et remplit les fusils pendant qu'il complète l'injection. Fini le renouvellement des rouleaux de coton et l'assèchement de la cavité.

LA DIGUE PERMET DE TRAVAILLER AVEC PLUS D'AGRÉMENT ET MOINS DE FATIGUE

La digue, en plus de sauver du temps au dentiste, lui permet de travailler plus confortablement; elle rend son travail moins fatigant et plus agréable.

1. Il ne souffre jamais de l'haleine du patient; la digue lui offre une protection idéale.

2. Il jouit d'une visibilité beaucoup plus grande; la joue, les lèvres, la langue, le plancher de la bouche sont repoussés pour offrir un champ opératoire idéal où la lumière pénètre à flot. Cet avantage s'apprécie tout particulièrement dans la région des dents postérieures où la joue a souvent tendance à s'appliquer sur la surface buccale des dents.

3. Le contraste entre la couleur foncée de la digue et la blancheur des dents

diminue la fatigue des yeux; car les détails apparaissent d'une façon plus nette.

4. Le miroir reste toujours clair; la respiration du patient n'y forme pas de buée.

5. La digue donne un sentiment de sécurité en protégeant contre les contractions brusques et inattendues des muscles. Ainsi, la tension nerveuse, à l'abri d'une interférence subite et imprévue, diminue d'intensité.

Ce qui rend le travail de dentisterie opératoire tellement agréable lorsqu'on utilise la digue, c'est l'élimination de tous ces petits ennuis qui, pris un à un, peuvent paraître insignifiants.

On s'habitue à manipuler la salive, à changer les rouleaux de coton, à éponger le sang, à respirer l'haleine du patient, à regarder le patient cracher et se rincer, à replacer la lumière l'appui-tête (certains patients, à coup sûr, rapetissent ou grandissent chaque fois qu'ils replacent leur tête).

L'emploi de la digue constitue la seule façon d'éliminer tous ces détails de conférer au travail de restauration dentaire un agrément et un intérêt réels.

La digue, en plus d'épargner du temps et de rendre le travail plus agréable, offre plusieurs autres avantages.

EMPLOI RATIONNEL DES POMPES À SUCCION RAPIDE

La digue permet l'emploi rationnel des pompes à succion rapide de type "Vacudent" ou "Pelvac".

Ces pompes utilisent le principe du vacuum et elles ont cet avantage d'aspirer les solides et les liquides.

Un orifice de 10 mm peut tirer l'eau à une distance de 12 mm. Les pompes à vacuum, contrairement aux pompes à succion ordinaire, n'ont pas à être immergées complètement dans le liquide pour en disposer; elles peuvent aspirer un morceau d'amalgame d'une distance de 12 mm.

Ces appareils, joints à la digue, offrent de grands avantages; la turbine peut fonctionner à son plein rendement et déverser sur les dents la plus grande quantité d'eau possible; la fraise se conserve toujours propre; l'eau, les parcelles de dents, les débris de carie et d'amalgame disparaissent par enchantement, sans tomber dans la bouche du patient, ni à côté de la digue.

On veut laver la cavité? Le patient n'a pas à se déplacer; on fait une bonne irrigation avec la seringue à eau et la pompe à succion déblaie à mesure.

Cette façon de procéder est aussi beaucoup plus propre et pour le patient et pour le dentiste.

Sans digue, nous avons vu que tous les débris tombent dans la bouche du patient: amas de carie contaminée, sang, poussière de dent se mêlent à la salive et créent un champ opératoire malpropre.

Il y a deux façons de nettoyer un champ opératoire sans digue.

Ou bien, on prie le patient de se rincer et de cracher ou bien on projette un jet d'air dans la cavité, avec ou sans eau.

Dans les deux cas, c'est le même résultat: salive mélangée de sang, de débris de dents, de carie et autres amas contaminés de bactéries.

Un des grands avantages du vacuum, c'est d'éliminer cette pénible insufflation d'air contaminé de bactéries dans une atmosphère où respire le patient et le dentiste; cette façon de procéder préserve aussi, contre les saletés, les vêtements du patient, du dentiste et de l'assistante.

RÉALISATION DE MEILLEURES OBTURATIONS GRÂCE À LA DIGUE

Voyons maintenant si, grâce à la digue, nous pouvons faire un meilleur travail et nous procurer une plus grande satisfaction.

Certains patients se présentent pour faire refaire des obturations. Quelles sont les causes les plus fréquentes de ces faillites?

L'examen des dents révèle souvent des obturations de classe III en silicate qui

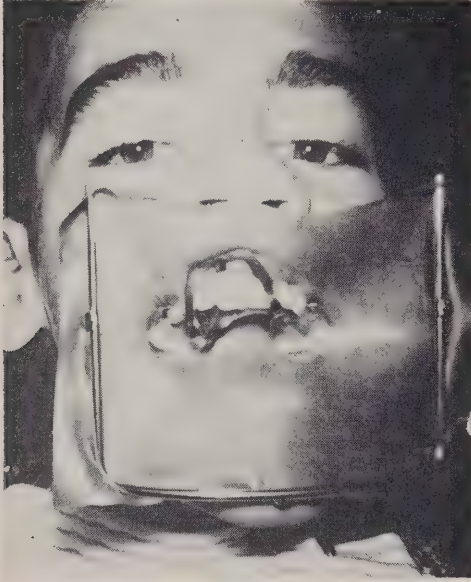


FIGURE 3



FIGURE 4

FIGURE 3 Les crampons incisifs repoussent le bord libre de la gencive à l'attachement épithélial; les caries gingivales sont plus accessibles.

FIGURE 4 Un cure-dent rond permet de repousser la digue et la gencive au-delà du niveau de la carie. Il y a ainsi moins de danger d'enrouler la fraise dans la digue.



FIGURE 5 Les cavités gingivales sur les molaires sont rendues particulièrement plus accessibles.

ont un défaut à la partie gingivale; l'obturation synthétique s'est désagrégée à cet endroit; elle montre une faille à son contact avec la dent, tandis que sa partie incisive est intacte.

Que s'est-il passé? Un phénomène élémentaire s'est produit, impossible à éviter même avec la plus grande précaution.

La salive, au cours de l'insertion, s'est infiltrée par capillarité entre la bandelette de cellulose et la paroi gingivale de la dent et a diminué la résistance de la substance obturatrice.

Le même phénomène se produit dans les cas de classe II pour amalgame; souvent on observe des récidives de carie, gingivalement, en bordure de la boîte proximale.

Ces récidives s'observent parce que, lors de l'insertion, avant que l'amalgame n'ait eu le temps de durcir, la salive s'est infiltrée par capillarité entre la bande de métal et la paroi de la dent et a contaminé l'amalgame. L'obturation s'est affaiblie dans sa partie gingivale et a pu, par la suite, se désagréger plus facilement et inviter une récidive de carie. Ceci ne serait pas arrivé avec la digue, car celle-ci empêche parfaitement la salive de s'infiltrer au niveau de la gencive.

Il faut souvent reconstituer des cavités de classe V sur les dents antérieures, soit en acrylique, soit en silicate. Il est très difficile, lorsque la cavité s'étend en dessous de la gencive, d'y contrôler l'insertion du matériel; la papille gingivale, la plupart du temps, repousse un peu la substance obturatrice et l'empêche d'adhérer parfaitement à la paroi gingivale. L'obturation peut être parfaite au point de vue esthétique, mais elle est souvent défectueuse sous la gencive; un explorateur constate rapidement cette faille.

Grâce à la digue et grâce à certains crampons spéciaux, il est facile de repousser la gencive au-delà du niveau de la carie (Figure 3). Le crampon retient la digue et le bord libre de la gencive repoussés à l'attachement gingival; ainsi, la cavité et l'obturation peuvent être finies bien au-dessus du bord libre de la gencive, dans une partie saine de la dent, car

le champ opératoire demeure sec durant toute l'opération.

Les récidives de carie, dans les classes V, se rencontrent dans les cas suivants: (1) obturations finies au-dessus du bord libre de la gencive; (2) obturations finies au-dessous du bord libre de la gencive, mais reposant sur une paroi gingivale plus ou moins saine, parce qu'elle est inaccessible (Figure 4); (3) Obturations insérées sans avoir, au préalable, exclu toute humidité.

L'utilisation de la digue est le seul moyen propre à satisfaire aux conditions d'une bonne obturation dans les cavités de classe V. Sinon, une obturation de ce genre n'est qu'un malheureux compromis (Figure 5).

CAS EXTRÊME DE CARIE GINGIVALE

Quand une cavité gingivale s'étend loin sous la gencive et où il est impossible d'installer le crampon sur une partie dure de la dent, on pratique une incision verticale de la gencive (comme au cours d'une extraction chirurgicale); on dégage un lambeau pour permettre l'installation du crampon et de la digue; la cavité et l'obturation sont alors complétées et tous les débris sont nettoyés avant d'enlever la digue (Figure 6a).

Aucun point de suture n'est nécessaire; le lambeau est relevé et pressé fermement en place; la fibrine du sang suffit pour le retenir. La plaie guérit sans complication, par première intention, et beaucoup plus rapidement qu'un tissu gingival lacéré et écorché par une fraise (Figure 6b).

Cette technique permet d'obtenir des dents qui seraient autrement vouées à l'extraction.

Dans les cas extrêmes où la carie a détruit la dent jusqu'à et même en-dessous de la crête alvéolaire, il est parfois nécessaire d'enlever un peu de l'os alvéolaire pour avoir un meilleur accès.

RÉACTION DU PATIENT FACE À LA DIGUE

Comment se comporte le patient devant la digue?

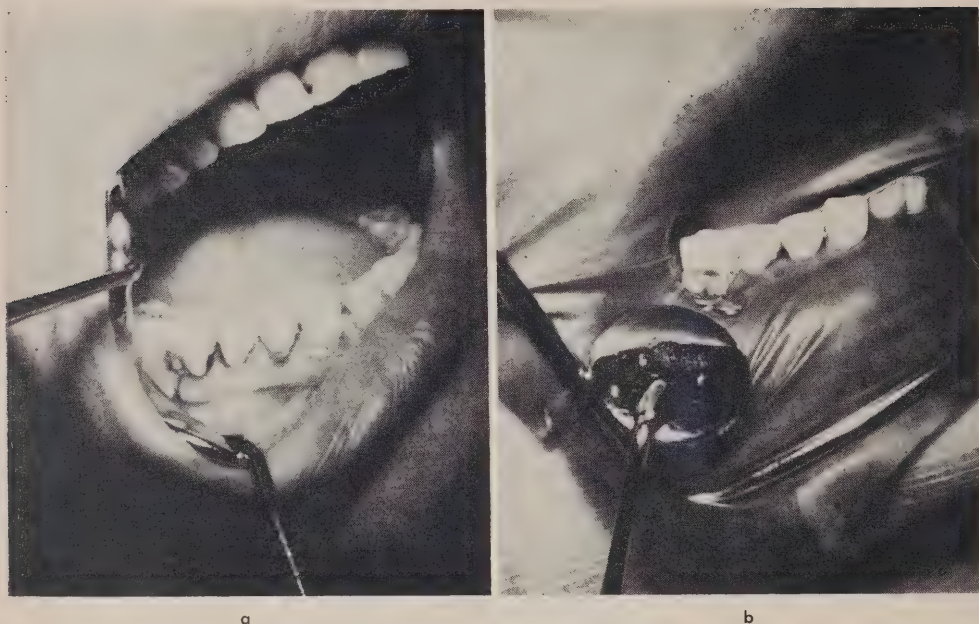


FIGURE 6 (a) Une incision verticale de la gencive et le dégagement d'un lambeau permet l'installation du crampon; une carie sub-gingivale profonde est plus accessible. (b) La fibrine du sang suffit pour retenir le lambeau; aucun point de suture n'est nécessaire.

Le temps a son importance; le travail se déroule dans une meilleure ambiance; les traitements sont de meilleure qualité. Mais le patient accepte-t-il facilement la digue?

Durant six mois, j'ai compilé des statistiques sur les réactions du patient. La grande majorité d'entre eux, non seulement ne font aucune différence, mais préfèrent cette technique.

Les patients apportent généralement les arguments suivants aux questions posées au sujet de la digue:

(a) *Propreté*

En effet, les lèvres du patient sont protégées contre le contact des doigts et des instruments. Le danger d'herpès est de beaucoup diminué et même annulé.

Le patient réalise que tous les débris, qui lui tombaient auparavant dans la bouche et dont il devait se débarrasser en crachant, sont maintenant éliminés sans que la salive en soit au préalable imprégnée.

(b) *Confort*

Tout d'abord, la digue aide à garder la bouche ouverte et elle exerce une tension uniforme à la commissure des lèvres. Sans digue, ce sont les doigts qui étirent la joue et d'une façon beaucoup moins régulière. Les lèvres, de plus, restent humides sous la digue et cette humidité procure un soulagement à ceux dont les lèvres se fendillent facilement; on peut même mettre de la vaseline sans que l'opérateur en soit ennuyé. Enfin, le

patient, s'il n'a pas à effectuer de fréquentes visites au crachoir, peut plus facilement se détendre; il s'assoit bien à son aise et il n'a pas à se déranger.

(c) Sécurité

La digue donne un sentiment de sécurité. C'est aussi logique que le fait de porter des gants pour travailler au jardin: on craint moins les égratignures et les épines dissimulées sous les mauvaises herbes!

De même, la digue rassure le patient; celui-ci a l'impression que le dentiste travaille dans un milieu extérieur et que sa langue, ses lèvres, ses joues, sa gencive sont à l'abri sous la digue, tout comme la main dans un gant ou le pied dans un soulier.

Il craint moins les ongles du dentiste, la pointe de ses ciseaux, le tranchant de ses fraises.

Mais il y a plus: les très hautes vitesses du tour exercent une force centrifuge considérable à la périphérie de la fraise et cette force projette des éclats dans toutes les directions.

Le dentiste peut se protéger les yeux en portant des lunettes; le patient, grâce à la digue, est à l'abri des éclats projetés vers l'arrière de la bouche.

CONCLUSIONS

Il ne suffit pas, pour se convaincre qu'il est utile et profitable d'employer la digue, de l'entendre dire ou de lire un texte.

Mettre la digue est un art, comme fraiser une dent ou prendre une empreinte.

La mise en place de la digue est une opération qui, avec l'usage, devient de plus en plus facile, de plus en plus rapide.

Si on me donnait le choix entre abandonner la digue ou la turbine, je crois que j'abandonnerais la turbine!

SUMMARY

The author stresses the importance of the rubber dam in modern techniques of operative dentistry. Particularly is this so in view of procedures followed in connection with the use of high-speed aspirators. The rubber dam facilitates treatment, improves vision of the operative field, and helps to control sudden muscular contractions on the part of the patient. It helps the dentist to perform a better service because it saves treatment time and makes for easier, less tiresome and more agreeable work.

Use of the rubber dam is indicated for the restoration of all cavities extending to the gingival tissues (Class II, III, IV and V cavities) in order to obtain perfect adaptation of the filling material to the cavity margin and tooth structure.

A survey to determine the psychological reaction of a group of patients to the rubber dam revealed that the vast majority have no objections and even favour its use for the following reasons: cleanliness, comfort and a sense of security.

4521 avenue d'Orléans

Au service de la profession dentaire • L'Association dentaire canadienne offre à ses membres, en plus d'autres avantages, un plan d'assurance-pension, un plan d'épargne-retraite, un plan d'assurance-hospitalisation, un plan d'assurance-groupe pour la maladie et les accidents et un plan de protection contre les frais fixes du cabinet. On écrit au Plan d'Assurance-Pension de l'A.D.C., 2249 rue Yonge, Toronto 7, Ontario.

Activités de la Ligue d'hygiène dentaire de la province de Québec: Résumés des rapports depuis septembre 1955

par EPHREM VINET, D.D.S., Montréal, P. Qué.

La Ligue d'Hygiène dentaire Inc., en 1945, s'était fixé comme objectif: l'éducation et la recherche. A partir de 1955, elle s'adjoignait huit dentistes spécialisés en hygiène publique et ses réalisations, en plusieurs domaines, se sont montrées intéressantes, tant pour le public que pour la profession.

Elle a, en organisant des séries de conférences et en distribuant des imprimés traitant d'hygiène dentaire, dirigé ses efforts particulièrement vers les instituteurs, des groupements d'adultes et les écoliers; elle a utilisé aussi, pour son travail, les journaux, la radio et la télévision.

La Ligue, en 1961, s'est chargée d'entreprendre, pour l'index de santé dentaire de la population du Canada de l'Association dentaire canadienne, un relevé de l'état des dents des habitants de la province de Québec et elle a été la première à soumettre des statistiques à l'échelle provinciale. Elle a aussi entrepris, durant la même année, à la demande des autorités de la ville de Montréal-Nord, une enquête semblable chez les écoliers qui fréquentent les institutions de cette région.

Le consultant dentaire du Ministère de la santé nationale et du bien-être social a récemment demandé à la Ligue d'entreprendre des recherches sur l'effet d'une nouvelle technique d'appliquer des fluorures sur les dents. Son personnel a traduit en français des imprimés traitant d'hygiène dentaire; elle a rédigé, à la demande du Collège des chirurgiens-dentistes de la province de Québec, des

fascicules et des plaquettes sur l'hygiène dentaire.

Les conférenciers de la Ligue sont en grande demande. On note les organismes suivants parmi ceux qui les ont invités à prendre la parole devant leurs membres: l'Ecole d'hygiène de l'Université de Montréal, plusieurs facultés dentaires, l'Association des médecins de langue française du Canada, l'Association canadienne d'hygiène publique, le comité volontaire de la section de santé du Sénat et de la Chambre des Communes, l'Association canadienne des inspecteurs sanitaires, la Société canadienne du cancer, la Ligue de santé du Canada et plusieurs sociétés dentaires de la province de Québec.

Divers organismes internationaux ont tenu à reconnaître le travail de la Ligue en honorant plusieurs de ses membres. Ainsi le Collège international des dentistes, le Collège américain des dentistes, la Société royale de santé, l'American Association for the Advancement of Science et l'American Public Health Association.

RÉSUMÉ DES ACTIVITÉS DEPUIS 1955

1. Education aux éducateurs et futurs éducateurs

Nombre de cours donnés	2,885
Nombre de maisons d'éducation où ces cours furent donnés ...	689
Nombre de personnes qui en ont bénéficié	29,785

Assistance totale (assistance multipliée par le nombre de cours) 108,668

2. Education aux adultes

Nombre de conférences données aux clubs sociaux, comités de citoyens, associations, conseils municipaux, etc. 494
Assistance à ces conférences 34,229

3. Education de la masse

Tous les moyens de communication furent utilisés pour renseigner la population sur les mesures d'hygiène préventive. Parmi ceux-ci, notons:

- (a) Les programmes télévisés ($\frac{1}{2}$ heure chacun pour la plupart) 174
Nombre de postes qui ont diffusé des programmes 8
- (b) Programmes radio-diffusés . 2,845
Nombre de postes qui ont diffusé 27
- (c) Communiqués aux journaux (Sans compter la chronique hebdomadaire expédiée par la Ligue aux journaux de la Province) 2,473
Nombre de journaux hebdomadaires, quotidiens, etc. qui ont collaboré 159
- (d) Conférences de presse 5

En plus d'organiser cinq conférences de presse, dont 2 à Montréal, 1 à Québec et 2 à Sherbrooke, la Ligue a collaboré à l'organisation de chacune des deux conférences de presse tenues chaque jour pendant toute une semaine à l'occasion du congrès de l'Association dentaire canadienne tenue à Montréal.

4. Distribution d'imprimés

- (a) Nombre de manuels d'hygiène dentaire et de résumés de cours distribués à l'appui de son enseignement aux éducateurs et futurs éducateurs .. 33,790

- (b) Imprimés distribués à l'occasion de conférences, causeries, cours 650,598

5. Education scolaire

(En collaboration avec le Service de santé de Montréal)
Nombre de causeries suivies de projections de films 322
Nombre d'élèves qui en ont profité 143,452

6. Fluoration

Alors que, en 1955, il n'y avait qu'une municipalité qui fluorait son eau de consommation, la province en compte maintenant 14.

Plus de 50% des municipalités, dépendant de Montréal pour leur eau de consommation, ont adopté des résolutions demandant la fluoration de l'aqueduc métropolitain après avoir été convaincus par la Ligue des bienfaits de cette mesure préventive.

7. Expositions

A l'occasion de divers congrès, la Ligue a organisé six kiosques exposant du matériel éducatif sur l'hygiène dentaire (imprimés, affiches, etc.).

8. Etendue du programme

L'éducation faite par la Ligue a bénéficié à plus de 189 municipalités de la province.

Le travail d'organisation a nécessité plus de 14,134 entrevues.

Le parcours du personnel couvre plus de 477,000 milles.

9. Enquêtes

En 1960, l'Association dentaire canadienne voulut faire un examen épidémiologique national. Le comité du Collège, à qui elle s'est adressée, a confié cette enquête à la Ligue. La Province de Québec a été la première de toutes les provinces

à produire son rapport sur cette enquête épidémiologique. Quelques-uns des résultats de cette enquête sont produits dans le rapport de la Ligue pour 1960-61. Le rapport complet se trouve au bureau de l'administrateur.

En 1961, la ville de Montréal-Nord demandait à la Ligue de faire un examen épidémiologique chez elle. Cet examen a été fait et la compilation en sera soumise d'ici un mois à la ville de Montréal-Nord ainsi qu'au bureau de la Ligue.

10. Travaux de recherche

À l'heure actuelle, le docteur Harry K. Brown, du Ministère de la santé nationale et du bien-être social, veut confier à la Ligue des travaux de recherches sur l'efficacité d'une nouvelle technique d'application topique des fluorures. Les pourparlers sont en cours.

11. Traduction

Le personnel de la Ligue a traduit de l'anglais au français plusieurs tracts touchant l'hygiène dentaire, entre autres: Aspects de la fluoration, le Fluor, Evidences et Arguments chimériques, La fluoration pour votre municipalité, La profession dentaire, une carrière.

12. Composition d'imprimés

À la demande du Collège, le personnel de la Ligue a composé des dépliants qui

ne demandent que son approbation pour être publiés.

13. Conférences spéciales

Les conférenciers de la Ligue sont en grande demande. Des organismes de notoriété nationale leur ont demandé leur concours, entre autres: l'Ecole d'hygiène de l'Université de Montréal, les Facultés de chirurgie dentaire, l'Association des médecins de langue française du Canada, l'Association canadienne d'hygiène publique, le Comité facultatif de santé du Sénat et de la Chambre des Communes, l'Association des inspecteurs sanitaires du Canada, la Société canadienne du cancer, la Ligue canadienne de santé et les diverses sociétés dentaires de la province de Québec.

14. Reconnaissances officielles

Le travail du personnel de la Ligue a été reconnu sur le plan international et plusieurs ont été honorés par: le Collège international des dentistes, l'American College of Dentists, la Royal Society of Health, l'American Association for Advancement of Science et l'American Public Health Association.

426 est blvd St-Joseph

XXXVes Journées Dentaires Internationales de Paris • Reprenant la tradition qui remonte à 1920, les XXXVes Journées dentaires internationales de Paris auront lieu la dernière semaine de novembre, du 19 au 25 novembre 1962, à la Maison de Chimie, 28bis rue Saint-Dominique, Paris 7e. Les membres du Comité d'Organisation et leur président, M. Pierre Depruneaux, ont prévu un ensemble de manifestations scientifiques et artistiques qui assurera l'habituel succès de ce congrès. La partie scientifique comprendra des séances tenues dans le grand amphithéâtre de la Maison de Chimie. La traduction simultanée permettra aux auditeurs français et étrangers de suivre les exposés et les discussions. Des tables-cliniques, installées dans les salles réservées, seront présentées chaque jour. Une exposition groupera des fournisseurs et des laboratoires de matériel et de produits dentaires. Comme par le passé, ces maisons contribueront, par leur fidèle collaboration, à la réussite de cette manifestation. Des tables de démonstration seront présentées journellement par les maisons de fournitures ou grossistes-importateurs afin de montrer les dernières nouveautés françaises et étrangères. Enfin le programme offrira aux congressistes inscrits et aux personnes les accompagnant la possibilité de participer aux festivités dont le détail sera prochainement publié. Pour tous renseignements, prière de s'adresser au Secrétaire Général: M. Georges Delbart, 7 rue Pierre Haret, Paris 9e, France.

LES ACTUALITES DENTAIRES

Le Canada

COLOMBIE BRITANNIQUE

Le discours du trône du gouvernement de la Colombie britannique demande l'établissement d'une faculté dentaire. — Les espoirs pour l'établissement, dans un avenir prochain, d'une faculté dentaire à l'Université de la Colombie britannique ont été ravivés quand le gouvernement a fait part de son projet de demander à la Législature l'autorisation de faire les dépenses nécessaires.

Le discours du trône ne donnait pas de détails précis, mais il mentionnait que des fonds seraient votés en vue de la fondation éventuelle d'une faculté dentaire.

SASKATCHEWAN

Vingt-six villes de Saskatchewan utilisent la fluoration. — Le Ministère de la santé publique de Saskatchewan annonce que douze autres villes ont, en 1961, commencé à doser le fluor de leur eau de consommation. Il y a donc maintenant 26 municipalités qui ajoutent du fluor à l'eau de leur aqueduc. Environ 200,000 personnes, soit 23 pour cent de toute la population de la province de Saskatchewan, consomment de l'eau fluorée. Plusieurs régions ont naturellement la teneur idéale de fluor dans leur eau.

NOUVELLE-ECOSSE

Décès du docteur J. Stanley Bagnall. — Le docteur J. Stanley Bagnall, qui fut secrétaire de l'Association dentaire canadienne et qui était doyen émérite de la faculté de chirurgie dentaire de l'Université Dalhousie, est décédé à l'âge de 74 ans. Il agissait comme archiviste de l'Association, depuis quelques années, et il amassait des documents historiques dans le but d'écrire un volume.

Le docteur Bagnall, qui fut un éducateur dentaire de marque, avait exercé ses activités à la faculté dentaire de Dalhousie, dès la fin

de ses études en 1921. Il a occupé des postes officiels dans plusieurs organismes dentaires, entre autres, la Société dentaire de Halifax, l'Association dentaire de la Nouvelle-Ecosse, le Collège international des dentistes, l'Association internationale des recherches dentaires. Il fut secrétaire de l'Association dentaire canadienne de 1924 à 1942, quand le secrétaire actuel prit le poste.

On se souviendra longtemps du docteur Bagnall comme ami et conseiller de centaines de diplômés de Dalhousie et d'autres de tout le Canada.

Le Corps dentaire royal canadien

LE BRIGADIER BAIRD SE REND AU MOYEN - ORIENT

Le brigadier K. M. Baird, directeur général des Services dentaires pour les forces armées du Canada, a quitté l'aéroport d'Uplands, à Ottawa, le 26 février, à bord d'un appareil Comet de l'Aviation royale du Canada, pour aller faire l'inspection du personnel et des installations du Corps dentaire qui se trouvent avec les détachements canadiens au Moyen-Orient. Les restrictions imposées récemment sur l'atterrissage des avions étrangers en France ont forcé le directeur général à passer par Keflavik (Islande), Baden Solingen (Allemagne), Pise (Italie) et Athènes (Grèce), avant d'arriver à El Arich.

Ce voyage, approuvé par le commandant de la Force d'urgence des Nations-Unies, a permis au directeur général de se rendre compte par lui-même du rôle de la Force d'urgence et de discuter les problèmes relatifs aux soins dentaires fournis aux troupes canadiennes qui se trouvent dans cette région. Le major E. J. C. Small, commandant du détachement dentaire de l'Unité de base des forces canadiennes au Moyen-Orient et officier dentiste principal de la Force d'urgence, a accompagné le directeur général dans les différents endroits où il y a des militaires canadiens.

REUNION D'HIVER A CHICAGO

Le colonel G. B. Shillington, sous-directeur général des Services dentaires, a assisté à la réunion d'hiver annuelle qui a eu lieu à Chicago du 19 au 22 février. Les majors J. L. Craig et J. J. N. Wright, officiers dentistes faisant partie du personnel de l'Ecole du Corps dentaire, sont allés le rejoindre à Chicago.

DES OFFICIERS DENTISTES SUIVENT DES COURS A COLORADO SPRINGS (E.-U.)

Le major J. W. Jolly, officier dentiste principal à Fort Churchill (Man.), a suivi le cours de chirurgie buccale d'une durée de deux semaines à la base de l'Aviation américaine de Colorado Springs, soit du 5 au 16 février. Ce cours, confié à un éminent spécialiste en la matière, le docteur W. W. Cogswell, a été des plus profitables à tous les officiers dentistes supérieurs qui ont eu l'avantage de le suivre.

NOUVELLES DE LA DIRECTION DES SERVICES DENTAIRES

Le brigadier Baird assiste à une réunion. — Le brigadier K. M. Baird, directeur général des Services dentaires pour les forces armées du Canada, a assisté à une réunion du bureau de rédaction de la revue *Oral Health*, tenue à Toronto le 25 avril dernier.

Le colonel Millar s'occupe du concours de la Milice. — Le colonel I. A. L. Millar, directeur des Services dentaires (Marine), vient de terminer une tournée d'inspection des unités de Milice du Corps dentaire au Canada en vue du concours annuel de compétence générale à l'intention de la Milice. Cette année, les unités suivantes y prendront part: la 50^e Unité dentaire d'Halifax, la 51^e Unité dentaire de Saint-Jean, la 54^e Unité dentaire d'Ottawa, la 56^e Unité dentaire de Toronto, la 57^e Unité dentaire de Winnipeg, la 58^e Unité dentaire de Regina, la 59^e Unité dentaire de Calgary, la 60^e Unité dentaire d'Edmonton et la 61^e Unité dentaire de Vancouver.

Le colonel Shillington assiste à une réunion. — Le colonel G. B. Shillington, sous-directeur général des Services dentaires, a assisté à une réunion du Conseil de l'Association dentaire du Canada qui a eu lieu à Toronto les 15 et 16 mars dernier en vue d'étudier les problèmes de l'enseignement dentaire.

Le major Brick assiste au congrès de la National Rifle Association. — Le major J. C.

Brick, de la Direction des services dentaires, représentait la Dominion of Canada Rifle Association lors du congrès annuel de la National Rifle Association, tenu à Washington du 31 mars au 5 avril.

Le major Brusso en tournée d'inspection. — Le major A. W. Brusso, principal officier du ravitaillement à la Direction des services dentaires, vient de terminer, dans les Régions militaires de l'Est, du Québec et de l'Ouest, une tournée d'inspection portant sur le matériel du quartier-maître des compagnies et sur les cliniques dentaires.

La Direction des services dentaires déménage. — La Direction des services dentaires est maintenant logée dans des locaux plus spacieux situés dans l'immeuble temporaire n° 8 de l'avenue Carling, à Ottawa, après avoir passé 15 ans dans l'immeuble "B" de la place Cartier.

ETUDE PORTANT SUR L'EMPLOI PLUS GENERALISE DU PERSONNEL AUXILIAIRE

Le Corps dentaire vient d'effectuer une étude de trois semaines portant sur l'emploi du personnel dentaire auxiliaire à la clinique dentaire de la Base de l'Aviation royale du Canada, à Uplands. Le but de cette étude était de déterminer la possibilité d'employer, pour le travail de clinique, le personnel auxiliaire ayant reçu la formation nécessaire pour effectuer certaines tâches techniques confiées jusqu'à présent à des officiers dentistes et de s'assurer de l'excellence des méthodes employées à cette fin.

Les résultats obtenus au cours de cette brève étude indiquent qu'au point de vue dentaire le rendement a augmenté d'une façon sensible, que la qualité du travail n'en a nullement souffert et que les personnes ainsi traitées ont fait preuve de la plus grande coopération. On est d'avis que les auxiliaires dentaires ainsi formés constitueraient une excellente addition à l'équipe dentaire et les autorités intéressées ont l'intention de poursuivre leurs études en ce sens.

Le groupe chargé d'étudier cette question était formé du colonel G. B. Shillington et du major D. H. Protheroe, tous deux membres de la Direction des services dentaires, ainsi que du major P. S. Sills et du capitaine C. G. Travis, de la Base de l'Aviation royale du Canada, à Uplands.

MILICE DU CORPS DENTAIRE

Quand la Milice du Corps dentaire a été formée en octobre 1946, elle comprenait huit

compagnies dentaires organisées sur le modèle des compagnies dentaires de campagne du temps de guerre, chacune d'elles pourvue d'un poste de commandement, d'une section de matériel, d'une section de laboratoire et de vingt détachements, ce qui représentait un effectif total de 28 officiers et 93 hommes. Les postes de commandement de ces compagnies étaient situés à Halifax, Québec, Montréal, Ottawa, Toronto, London, Winnipeg et Vancouver.

L'organisation en a été changée en 1954, de sorte que la Milice compte maintenant 12 unités dentaires et un Comité consultatif des Services dentaires. Chaque unité dentaire de la Milice a un effectif de 28 officiers et 84 hommes. Le Comité consultatif se compose d'un directeur adjoint des Services dentaires du grade de colonel, dans chaque Région militaire, et d'un sous-directeur adjoint des Services dentaires du grade de lieutenant-colonel, au quartier général de chaque Secteur militaire.

Le rôle actuel de la Milice du Corps dentaire consiste surtout à s'occuper de l'instruction portant sur la survie nationale; c'est pourquoi les officiers et les autres militaires du Corps dentaire vont à l'Ecole du Corps dentaire pour y suivre des cours sur les soins à donner dans les cas de pertes en masse.

Voici quels sont les endroits où se trouvent ces unités:

- 50^e Unité dentaire, Halifax — Lieut.-Col. J. E. Hallett
- 51^e Unité dentaire, Saint-Jean — Lieut.-Col. H. F. Bonnell
- 52^e Unité dentaire — inactive
- 53^e Unité dentaire, Montréal — Major S. J. Gouroff
- 54^e Unité dentaire, Ottawa — Lieut.-Col. H. J. Chartrand
- 55^e Unité dentaire, London — Lieut.-Col. A. J. Harris
- 56^e Unité dentaire, Toronto — Lieut.-Col. A. Z. Henry
- 57^e Unité dentaire, Winnipeg — Lieut.-Col. M. J. Snidal
- 58^e Unité dentaire, Saskatoon — Lieut.-Col. A. Mintz
- 59^e Unité Dentaire, Calgary — Lieut.-Col. G. N. Findlay
- 60^e Unité dentaire, Edmonton — Lieut.-Col. S. G. Geldart
- 61^e Unité dentaire, Vancouver — Lieut.-Col. P. L. Rondeau

CLINIQUES SUR LES BRIDGES ET COURONNES AU MOYEN-ORIENT

Des officiers dentistes originaires de la Yougoslavie, du Brésil, de la Suède et du Danemark ont assisté à une clinique sur les

couronnes et les bridges donnée récemment par le détachement du Corps dentaire canadien affecté à la Force d'urgence des Nations Unies. Le major E. J. C. Small, commandant du détachement, a souhaité la bienvenue aux officiers et il a expliqué le programme, qui comportait des films et des conférences avec démonstration d'instruments. Après la réunion, les visiteurs ont été reçus à dîner par les officiers dentistes du détachement canadien au mess des officiers du camp de Rafah.

LE COLONEL KEARNEY ET LE MAJOR COBB ASSISTENT À UNE REUNION DE DENTISTES

Le colonel B. P. Kearney et le major T. D. Cobb ont assisté au premier congrès annuel de l'Association dentaire de l'Alberta, qui a eu lieu à Edmonton les 29 et 30 mars dernier.

LE COLONEL PURDY À OTTAWA

Le colonel C. E. Purdy, commandant de l'Ecole du Corps dentaire, s'est rendu à Ottawa le 27 avril en vue d'assister à une réunion du Comité du matériel du Corps dentaire.

LE MAJOR THOMPSON SUIT UN COURS

Le major W. R. Thompson, qui fait partie du personnel de l'Ecole du Corps dentaire, suit actuellement le cours de chirurgie buccale qu'on donne au Doctors Hospital, de Toronto.

LE LT.-COL. HILLIER INVITE COMME CONFÉRENCIER

Le lieutenant-colonel D. H. Hillier, qui fait partie de la Direction des services dentaires, a prononcé une série de causeries sur la "direction des cliniques" devant les officiers qui suivent le cours clinique de mars-avril à l'Ecole du Corps dentaire.

AFFECTATION, LIBERATIONS

Le capitaine M. D. G. Conrad vient d'être affecté au détachement dentaire canadien qui se trouve avec les Forces d'urgence des Nations Unies. Il remplace de capitaine R. D. Bunt, qui est revenu au Canada pour servir à la Base de l'Aviation canadienne de Trenton (Ont.).

Le capitaine E. G. Baird a quitté le Corps dentaire pour ouvrir son propre bureau à Campbellford (Ont.).

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La fluoridation • Les dentistes ont le devoir de convaincre leurs patients que la fluoridation réduit la carie dentaire et cela d'une façon sûre et économique.

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Radiographic Interpretation of an Unusual Anterior Maxillary Problem

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The case here illustrated demonstrates the presence of two retained maxillary central incisors with two impacted supernumerary maxillary central incisors preventing the eruption of the maxillary permanent central incisors. The patient is

a 9-year old female with a family history of similar occurrences during two generations.

A clinical photograph showing the retained maxillary deciduous central incisors is illustrated in Figure 1.

Figures 2, 3, 4, and 5 are reproductions of radiographs portraying bilateral retained deciduous central incisors, as well as bilateral impacted supernumerary central incisor teeth which have prevented eruption of the permanent central incisors.

These figures further illustrate the theory of parallax. Figure 4, a radiograph

Photographic illustrations for this paper were reproduced by the Eastman Kodak Co., Rochester, New York.

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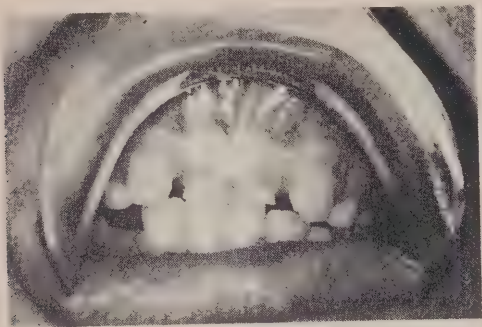


FIGURE 1

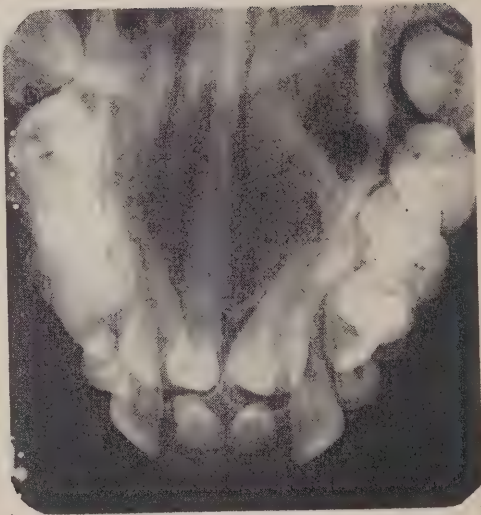


FIGURE 2

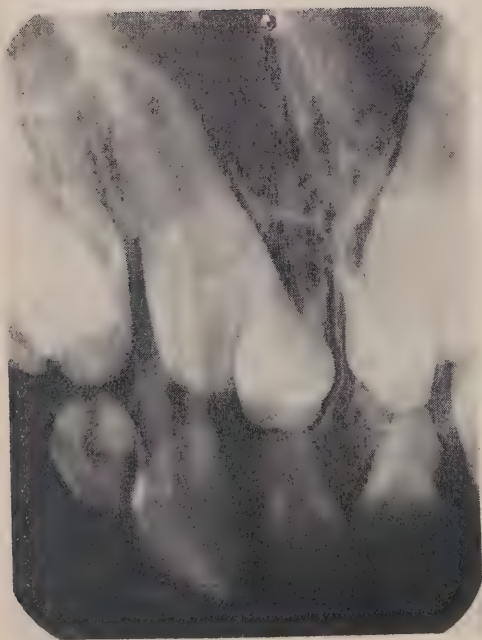


FIGURE 3



FIGURE 4



FIGURE 5

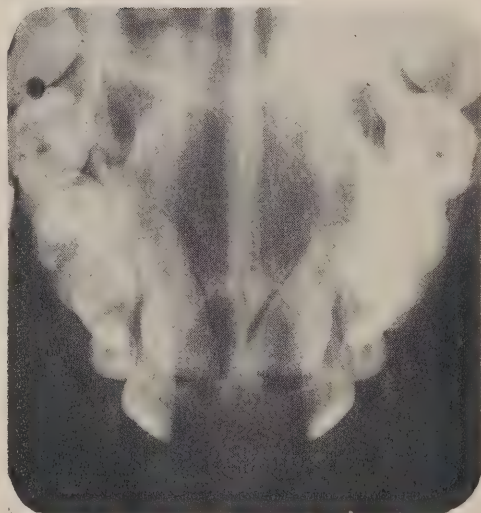


FIGURE 6

taken in the maxillary central periapical position, demonstrates two impacted supernumerary central incisors located one on each side of the mid-line between the deciduous and the unerupted permanent central incisors. Figures 3 and 5, taken in the right and left lateral maxillary periapical position, illustrate that as the position of the x-ray cone moves distally, so does the relationship of the impacted supernumerary central incisors to the unerupted permanent central incisors. In accordance with the theory of parallax one would assume that these supernumerary teeth lie on the palatal aspect of the maxilla and on the lingual side of the unerupted permanent central incisors. The occlusal radiograph in Figure 2 tends to support this view. The surgical approach was therefore made from the palatal aspect. The supernumerary teeth were found to lie as predicted on the lingual aspect of the permanent unerupted central incisors.

Figure 6 illustrates the result following the removal of the deciduous and the supernumerary impacted incisors.

This case illustrates the following points:

1. An unusual, three-in-line relationship of bilateral retained maxillary deciduous central incisors, bilateral impacted supernumerary maxillary central incisors, and bilateral unerupted permanent maxillary central incisors.

2. The need for radiographs in all patients where the normal eruptive time has elapsed.

3. The theory of parallax which aids in the location of the entity and gives guidance to the surgical approach.

4. The postoperative radiograph serves to demonstrate resolution of the surgical problem.

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Dental Health Status of an Adult Group

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There have been numerous surveys of the dental health status of children at all age levels. Many have been reported in the literature, others have not. There is, however, a dearth of comparable material concerning the dental health status of adults. This explains in part the reluctance and inability of dentists and dental organizations, to undertake insurance type programs comparable to those being developed in the medical care field. The setting of a premium which would cover all eventualities appears to be one of the obstacles to the establishment of prepaid plans for individual or group dental care of a comprehensive nature.

There exists no means of collecting such information from private practice records, which in the main are of infinite variety and not designed for the purpose.

METHOD

The present study was undertaken for the definite purpose of acquiring some such information not otherwise available. It covers what can be considered to be a rather select group in terms of income and continuity of employment, as well as above average exposure to general health activity, all being employees of a provincial department of health. It is not to be taken as a cross-section of the general public, as no attempt was made to ascertain length of employment in the department. Nor was it possible to determine socio-economic circumstances during the life time dental experience of the participants. This, to the writer, appears

to be one of the intangibles for which no objective criteria have yet been established.

A special form (Figure 1) was designed and examinations were conducted under ideal conditions, using mirrors and explorers and standardized artificial lighting. No radiographs were taken. Assessment of oral hygiene, gingivitis and periodontal disease, as far as practicable, followed criteria set out in the Canadian dental survey manual¹ as approved by the Canadian Dental Association. Consent to participate was obtained with a 70 per cent response from a total staff of 489. For a variety of reasons the number examined totalled only 266 or slightly less than 55 per cent of the staff.

In order to avoid any possible embarrassment, those examined were divided into three age groups, by asking which of three age groups, defined clearly on a conspicuous card, the participant fell into, as follows:

A—up to 25 years of age.

B—25-55 years of age.

C—over 55 years of age.

The totals in each age group examined were: A—71, B—183 and C—12.

Distribution in respect to category of employment was comparatively uniform throughout. No attempt was made to differentiate as between male and female in the tables.

ANALYSIS OF THE DATA

Table 1 indicates loss of permanent teeth by number and percentage and by age group. Table 2 presents details of

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Saskatchewan Department of Public Health

ADULT DENTAL SURVEY

Serial Number _____ Marital Status M _____ S _____ Age Group _____
Sex M _____ F _____ Dependents _____

Upper															
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
R															L
Lower															

Summary

1. Number teeth filled - Alloy Gold Other Total

2. Number teeth requiring fillings - 1 2 3 4 5

3. Number teeth requiring extraction - 1 2 3 4 5

4. Number teeth missing (a) Total -

(b) First permanent molars -

5. Condition of periodontium (a) Gingivitis _____

(b) Acute periodontal disease _____

(c) Chronic periodontal disease _____

6. Status of occlusal efficiency - Good _____ Fair _____ Poor _____

7. Replacements

(a) Bridges -

(b) Partial dentures - Tissue Bearing _____ Tooth Bearing _____

Base - Vulcanite _____ Acrylic _____ Cast Metal _____

Clasps - Wrought _____ Cast _____

Bar - Palatal _____ Lingual _____

Worn satisfactorily Yes _____ No _____

(c) Complete dentures - Upper _____ Lower _____ Both _____

Satisfactory _____

Need replacement or relines _____

8. Malocclusion - Mesial _____ Distal _____ Excess overbite or jet _____

Crossbite Anterior _____ Posterior _____

9. Hygiene - Good _____ Fair _____ Poor _____ Professional care essential _____

10. Abnormalities and remarks.

Examiner

FIGURE 1

TABLE 1 Tooth loss in the permanent dentition.

Attribute	Group A		Group B		Group C	
Number of persons examined	71		183		12	
Persons with 0 missing teeth	28	40%	25	14%	—	—
Persons with 1 missing tooth	11	16%	16	9%	1	8%
Persons with 2 missing teeth	10	14%	15	8%	—	—
Persons with 3 missing teeth	5	7%	18	10%	2	16%
Persons with 4 missing teeth	5	7%	9	5%	9	75%*
Persons with 5 or more missing teeth	12	16%	100	54%	—	—
Persons with one or more missing teeth	39	59%	158	86%	12	100%
Average loss of first permanent molars per person	0.8		2.0		3.2	

*Persons with 4 or more missing teeth.

dental restorations and replacements. Table 3 summarizes oral hygiene, gingivitis and periodontal disease in the three age groups.

TOOTH MORTALITY

Group A.—As permanent tooth loss, particularly of the first permanent molar, is generally due to a lack of timely treatment, and no single individual in this survey exhibited complete lack of dental care, the only conclusion which can be drawn is that neglect in early life, for whatever reason, must account for such a high ratio of persons having lost one or more permanent teeth by the age of 25.

Group B.—As this group covers such a wide age range it is suggested that (1) unavoidable neglect during the depression years, followed by a considerable shortage of dentists during the war years, (2) the almost total lack of any organized school dental inspection service as a motivational device and, (3) the advent of periodontal disease, the greatest single reason for tooth loss after middle life, are the reasons for the overall high percentage figures, as well as the high percentage with tooth loss in excess of four teeth.

Group C.—The small number in this group renders comment unnecessary, although their tooth mortality experience could

TABLE 2 Dental Restorations and Replacements.

Attribute	Group A	Group B	Group C
Number of persons examined	71	183	12
Average number of gold, amalgam and synthetic porcelain restorations per person	8.0	9.1	6.0
Per cent of persons with partial dentures or bridges	14%	34%	8%
Average number of teeth replaced per person	0.6	1.2	0.6
Per cent of persons with full dentures — upper and/or lower	6%	29%	91%

Table 3 Gingivitis and periodontal disease.

Attribute	Group A	Group B	Group C
Number of persons examined*	(71)	(183)	(12)
Percentage of persons with good oral hygiene	69.6%	73.4%	42.9%
Percentage of persons with fair oral hygiene	29.0%	21.6%	42.9%
Percentage of persons with poor oral hygiene	1.4%	5.6%	14.3%
Percentage of persons with gingivitis	39.4%	23.6%	28.6%
Percentage of persons with periodontal involvement	4.2%	8.2%	14.3%

*Reduced samples for some of the items.

very well be above the general average. It may be stated, however, that 7 persons or over 50 per cent, were in possession of complete or partial dentures. The remainder retained their teeth, because of a high rate of dental treatment — 71 teeth filled or 10+ per individual.

FIRST PERMANENT MOLAR MORTALITY

Erupting at six years of age, these teeth have the longest exposure time in the mouth and are most frequently mistaken for deciduous teeth. The idea is still prevalent that the permanent teeth erupt in the same sequence as the deciduous teeth, beginning with the anterior teeth. This appears to be an area for greater emphasis in dental health educational programs.

As contributory to malocclusion and possible traumatic occlusion, resulting in early periodontal disease, the premature loss of the first permanent molar is a matter of some concern, particularly in the younger age groups.

Although it is believed that the total group in this study availed themselves of a higher than average amount of dental care than could be expected in a random sample of the general population, it is quite evident that the service has fallen

far short of the theoretical attainable objective of dentistry. The factors presumed to be responsible may be listed as follows:

1. Insufficient, irregular care during early childhood. The early loss of first permanent molars in groups A and B substantiates this view.

2. Lack of regular systematic care, carried over into adult life, which results in the necessity for replacements. This is reflected by the progressive increase in the number of bridges and partial dentures in group B, and ultimately the rather high percentage of complete dentures in group C.

3. Increased caries susceptibility. Replacement of lost permanent teeth by partial or complete dentures in group A can only be attributed to above average caries susceptibility, as periodontal disease seldom is a cause of tooth loss until middle life. There is considerable evidence to suggest that high caries susceptibility is present in an increasing percentage of the population from the beginning of the eruption of the teeth, and is therefore not ordinarily amenable to remedial dental care. Although difficult to establish,

there can be no doubt that this is directly attributable to the nutritional status of the individual and may even have familial or hereditary characteristics.

Although statistical evidence of the value of fluoridation in reducing dental caries rates for large groups of children is overwhelming, there appears to be little evidence of similar value in the case of highly susceptible individuals. There is a dearth of studies which might explain the high degree of variation in the preventive values of fluoridation as it pertains to individuals.

GINGIVITIS AND PERIODONTAL DISEASE

There can be no question but that routine oral hygiene practices in our modern society are directly linked with the prevalence of gingivitis and later to periodontal disease. As the aetiology of periodontal disease in some of its manifestations is still uncertain, one suspects that the major decline in normal masticatory function associated with modern diets is at least one of the factors. Daily oral hygiene practices as presently taught, therefore, in a measure substitute for the decline in functional use of the teeth, at least as far as the circulation of blood is concerned. This for obvious reasons must and always will be a responsibility of the individual.

On the other hand the dentist has a responsibility (1) to diagnose as early as possible any deviation from the normal tone of the gingivae and (2) to institute appropriate treatment, including improvement in the performance of such daily hygiene practices as can be carried on only by the patient.

Many of those questioned in this study, all of whom had had probably more than average professional dental care, were completely unaware of the presence of a condition which, ultimately becoming chronic, would result in tooth loss, with or without caries of the crown.

Since much of periodontal treatment is undertaken during the chronic stages of the disease when cure is indeed problematical, it would appear that much more emphasis should be applied to the detection, recognition and simple measures which may be instituted in the initial stages of the disease, i.e. in the younger age groups.

As expected, the percentage with actual periodontal involvement in group B was materially greater than in group A, although the percentage with simple gingivitis was somewhat lower. The gingival phenomena might be explained simply in terms of higher natural resistance. Periodontal involvement was clearly evidenced (without radiographic examination) by gingival recession, pocket formation and tooth mobility.

Here clearly is a field where there is very great need for improvement in dental practice, patient education and, of prime importance, the follow-up of patients. Recent comments in the dental literature increasingly substantiate this view.

ORAL HEALTH QUESTIONNAIRE

A simple form of questionnaire was handed each participant in this survey, with a request to complete and return on a purely voluntary basis. Analysis of the returns (some 117 replies) provides an interesting side light on the attitudes and views of the participants in respect to dental health and dentistry. Summarized, the following points seem to represent the general view:

1. *Regular Dental Care.*—Although a relatively high percentage had visited a dental office within the preceding twelve months, it appears that too few dental patients were impressed with the necessity of systematic dental inspection, a feature indicative of too late and too little dental health education. There was little direct evidence indicating how many

were on a regular recall list operated by their own dentist — at least this was seldom commented on.

2. *Oral Hygiene.* — Most subjects were aware of the reasons and need for regular oral hygiene practices following meals or snacks. Of those specifically commenting on tooth brushing habits, a majority admitted falling far short of the known ideal. Surprisingly, a number referred to brushing at night and in the morning. This is concrete evidence of a lack of understanding, or disregard, of the direct relationship between dental caries and residual food debris following the intake of most modern foods of a cariogenic nature. A few commented on the nature of food and the value of detergent or cleansing types of food such as raw apples, vegetables, etc., which are non-cariogenic as well as natural cleansers.

3. *Periodontal Disease.* — As periodontal disease is the most common cause of tooth loss beginning with the third decade of life, it was disappointing to discover an almost general lack of knowledge or interest in this condition. As symptoms of the onset and progress of this disease are insidious, the only conclusion that can be drawn from a group who have an above average contact with members of the dental profession is that insufficient emphasis has been directed to the subtle seriousness of this condition. As treatment and prevention is possible, although involving the utmost co-operation between patient and dentist, the least that can be said is that this is an area where dental health education of the patient is seriously lacking, and a responsibility of the dental profession that should be greatly intensified.

It is clear that too much dependence is placed on the reparative and replacement services of the dentist, whether regular or sporadic, and that too few are

seriously aware of what they themselves can accomplish in improving their own dental health by careful attention to diet and systematic dental hygiene, both as it relates to caries and periodontal disease.

GENERAL DISCUSSION

As dental health is long range in its objectives and practices, the influence of the example of parents upon the succeeding generation cannot be over-estimated, insofar as both diet and dental hygiene are concerned. Parents need to be taught that they too must accept the same sacrifices expected from their children. Although an effort may be made to teach the principles of good dental health in school or public health clinics, this is a poor substitute for the home environment and example of the parents in regard to the food consumed and the oral hygiene practices daily performed.

This small study portrays a vast amount of dental care provided at no inconsiderable expense, some of which came too late in the life of the individual to be classed as truly preventive, and much of which was in reality unnecessary because the conditions were more or less preventable.

If dentistry is to attain its true objective, it is apparent that there must be greater co-operation between patient and dentist. A do-it-yourself policy by patients, based on a thorough understanding of the processes involved in the two major dental diseases resulting in tooth loss, can first, reduce costs to the individual patient in the long run, and second, permit the dentist to serve a larger number of patients than he is now able to do.

Besides being an attainable dental objective, this is no less an important public health objective, for it is based on the first principle of public health i.e. that prevention leads to control, and hopefully, to ultimate elimination of the

disease itself. Elimination of dental caries would open up the field of periodontal disease, which to date appears to have all the aspects of being both chronic and incurable. Without the co-operation of the public, neither control nor elimination is a possibility. Do we have it?

RÉSUMÉ

Les enfants de tous âges ont été l'objet de nombreuses enquêtes au sujet de l'état de leurs dents; il y a cependant peu de statistiques semblables pour les adultes.

L'auteur rapporte, dans cet article, les résultats de l'examen de 266 adultes employés au Ministère de santé publique de la province de Saskatchewan. Soixante-et-onze personnes avaient moins de vingt-cinq ans, cent-quatre-vingt-trois avaient de vingt-cinq à cinquante-cinq ans et douze avaient plus de cinquante-cinq ans.

On avait conçu une forme spéciale de dossier; les examens furent faits dans les meilleures conditions possibles, en utilisant un bon éclairage, des miroirs et des explorateurs. Il n'y eut pas de radiographie. On se servit, pour situer le degré d'hygiène buccale et pour déceler les gingivites et les maladies périodentaires, des critères préconisés dans le manuel de l'enquête dentaire canadienne, tel qu'approuvé par l'Association dentaire canadienne. Le tableau 1 montre en pourcentage le nombre des dents permanentes absentes par groupe d'âge. Le tableau 2 montre le nombre des obturations et des restaurations. Le tableau 3 résume l'état de l'hygiène dentaire, la fréquence des

gingivites et des maladies périodentaires dans les trois groupes d'âge. Cent-dix-sept personnes, qui avaient été examinées, ont retourné un questionnaire supplémentaire qui leur avait été remis pour connaître leur réactions vis-à-vis l'hygiène dentaire.

Un nombre assez restreint de personnes, quoique plusieurs d'entre elles s'étaient fait traiter chez un dentiste au cours des douze mois précédents, ne se souciaient guère de se faire examiner les dents à des époques fixes. La plupart d'entre elles étaient au courant des avantages de mettre en pratique régulièrement des mesures d'hygiène dentaire, mais elles ont admis qu'elles étaient loin de faire ce qu'elles devraient.

On connaissait à peine les maladies périodentaires et on ne s'en souciait guère. Cette constatation montre que la profession dentaire n'a pas assez insisté sur les méfaits de cette maladie.

Cette recherche indique que de nombreuses restaurations sont faites à un coût élevé; ces traitements toutefois sont prodigués à un âge aussi tardif qu'on ne peut pas les classer comme réellement préventifs; la plupart de ces traitements n'étaient pas en réalité nécessaires, puisque les défauts étaient plus ou moins prévenables.

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Provincial Health and
Welfare Building

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Gingival Bleeding and Pregnancy

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Clinical opinion has it that gingival bleeding may be more apparent during gestation than in a nonpregnant period. However, there is a paucity of published material on this subject. This report will attempt to clarify further the relationships between pregnancy and gingival bleeding.

REVIEW OF THE LITERATURE

An examination of the published literature reveals only a few references specifying a relationship between gingival bleeding and other factors.

Sud¹ reports that the amount of gingival haemorrhage increases with advance of gestation. Hicks² discovered, as he points out through five case reports, that the habitual ingestion of large quantities of citrus fruit juices over a period of one to three years leads to an increased tendency for the gingiva to bleed. In the course of a general discussion of gingivitis, Maloney³ suggested that gingival bleeding is often an indication of a dietary lack in which vitamin C should be employed as the therapeutic agent. However, Kutscher⁴ studied 63 cases of gingivitis associated with pregnancy and concluded that vitamin C was not significantly effective in the treatment of gingival haemorrhage associated with gestation. Mesrobian⁵ is of the opinion that chronic marginal gingivitis is the condition most frequently as-

sociated with gingival bleeding. Middleton⁶ reports that pregnancy tumours are often the cause for bleeding of the gingiva. Mesrobian,⁵ Stuhl,⁷ Weisberger,⁸ and Roth⁹ have concluded from their studies and observations that an ascorbic acid deficiency is manifested through gingival haemorrhage. However, Burrill¹⁰ concludes, from his study of ascorbic acid deficiency, that the five deficient cases show no greater tendency toward gingival bleeding than would be expected from a nondeficient case. Two cases were used as controls. These conclusions were based on the interpretation of clinical examination data, colour photographs, capillary fragility tests, oral radiographs, and a microscopic examination of the gingival capillaries.

METHOD OF INVESTIGATION

Three hundred and sixty-six pregnant and postpartum patients were studied in five obstetrical clinics in Birmingham, Alabama. The general plan of the study has already been described.¹¹ A total of twenty-six items were reviewed under the following headings: (1) general information, (2) obstetrical findings, (3) obstetrical complications, (4) special dietary habits, (5) oral hygiene and history of oral bleeding, (6) intraoral examination findings, and (7) laboratory data.

A record was kept of the number of months of pregnancy to the half month. These data have been summarized in trimester form in Table 1. It can be observed that 90.2 per cent of the patients were pregnant and the remaining, approximately 10 per cent, postpartum. In addition,

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TABLE 1 Distribution of pregnancy state.

Attribute	Number of patients	Percentage of patients
Pregnant	330	90.2
First trimester	15	4.1
Second trimester	120	32.8
Third trimester	195	53.3
Postpartum	36	9.8
Total	366	100.0*

*Approximate

Table 1 points up the fact that the overwhelming number of pregnant patients, over half, were observed during the third trimester. All postpartum patients were observed during the second month after delivery.

Gingival bleeding was graded on a five-point scale.¹² Zero was assigned to indicate no gingival bleeding. When bleeding was associated with toothbrushing, a value of one was employed. Gingival bleeding accompanying the eating of hard foods was given a value of two. Bleeding associated with soft foods was scored as three. Four was used to indicate so-called spontaneous bleeding.

The several local factors considered in the subgroup analysis were recorded as follows: (1) toothbrushing designated as

number of times daily, (2) periodontal status according to the PMA index,¹³ (3) clinical tooth mobility on a three-point scale with 0=none, 1=less than 1 mm., and 2=greater than 1 mm., and (4) the actual number of teeth present clinically.

Systemic factors were tabulated according to the following plan: (1) trimester analysis recorded as number of months pregnant, (2) gravida, (3) citrus intake as judged by the number of three-ounce glasses of citrus fruit juice per week, and (4) vitamin supplementation in terms of the number of tablets per day.

The factors acting either locally or systemically were recorded in the following manner: (1) age in years, (2) cigarette consumption in number of cigarettes daily, and (3) race.

RESULTS

The results were considered in two ways: (1) general characteristics, and (2) subgroup analyses.

General Characteristics

Table 2 shows the frequency distribution of the 366 patients in terms of gingival bleeding. It can be observed that approximately one-third of the individuals, both pregnant and postpartum, displayed

TABLE 2 Distribution of gingival bleeding.

Attribute	Number of pregnant patients	Percentage	Number of postpartum patients	Percentage
No gingival bleeding	112	34.1	14	40.0
Gingival bleeding with toothbrushing	191	58.2	16	45.7
Gingival bleeding with eating hard foods	21	6.4	5	14.3
Gingival bleeding with eating soft foods	4	1.2	0	0.0
Total	328*	100.0	35	100.0

*3 edentulous patients not included

TABLE 3 Gingival bleeding and pregnancy.

	Pregnant	Postpartum	P
Number of patients	328*	35*	
Mean gingival bleeding score and standard deviation	.74 ± .59	.74 ± .67	.500

*3 edentulous patients not included

no gingival bleeding. Of the remaining two-thirds, the overwhelming percentage in both groups was related in some way with toothbrushing.

Table 3 summarizes the relationship of gingival bleeding and the pregnancy state. It can be observed that the mean values and the standard deviations for the pregnant and postpartum groups are not very different. Further, the probability value of .500 points up the lack of statistical significance of the difference of the means. Thus, one may conclude from these data that, during gestation, gingival bleeding apparently does not occur with greater frequency than in the nonpregnant state.

Subgroup Analyses

The question arises as to whether other factors alone or in combination with ges-

tation exist which might provide some clue as to the mechanisms in the relationship between gestation and gingival bleeding. Accordingly, subgroup analyses were made for circumstances which may conceivably contribute to gingival bleeding by way of: (1) local, (2) systemic, and (3) local and systemic means.

Local Factors.—A number of local factors have been incriminated as contributors to the aetiology of gingival bleeding. Some of these have been investigated in this study and are presented in Table 4. The legend in this table should be noted since, in each section, the total number of patients is less than the original total (366). Consideration is given to four items: (1) toothbrushing, (2) periodontal status, (3) clinical tooth mobility, and (4) number of teeth.

TABLE 4 Gingival bleeding and pregnancy state in the light of possible aetiological factors: toothbrushing, PMA score, tooth mobility, and number of teeth.

Factor relationship	Number of patients	Mean gingival bleeding score and S.D.	P
No toothbrushing	25	1.08 ± .66	<.005
Toothbrushing*	142	.68 ± .58	
PMA zero	100	.48 ± .52	<.001
PMA† positive	131	.94 ± .65	
No tooth mobility	342	.75 ± .59	>.400
Tooth mobility	17	.65 ± .53	
Many teeth‡	250	.81 ± .59	>.200
Few teeth§	29	.69 ± .57	

*2 or more times per day

†PMA 1.0 or greater

‡25 or more teeth

§Fewer than 20 teeth

Toothbrushing.—There is evidence to indicate that gingival bleeding is a function of oral hygiene and, therefore, in some manner related to toothbrushing. Therefore, it was thought advisable to analyse the pregnant and postpartum patients in terms of toothbrushing. This information is summarized in Table 4. The evidence indicates that gingival bleeding occurs more commonly in those patients who do not brush their teeth. This is underscored by the statistical significance of the probability value ($P < .005$). In other words, apparently toothbrushing may contribute to better oral hygiene which, in turn, may contribute to less gingival bleeding.

Periodontal Status.—Many investigators hold that the periodontal status is largely, if not exclusively, a function of local operating factors. Also, it is believed by many authorities that gingival bleeding is related in some way to periodontal status. Therefore, the pregnant and postpartum patients were classified into two groups. The first category includes those individuals with no clinical evidence of periodontal pathosis as indicated by a PMA of zero. In contrast, those subjects with an average PMA of 1.0 or greater were grouped to depict obvious clinical disease. An examination of Table 4 shows that there is a statistically significant difference ($P < .001$) between these two groups. This would indicate that gingival bleeding is much greater, in this study, among those patients who also show evidence of periodontal pathosis.

Clinical Tooth Mobility.—This clinical finding is often regarded as evidence of periodontal disease and as a possible causative factor in gingival bleeding. Therefore, those patients with and without clinical tooth mobility were studied with regard to gingival bleeding. Table 4 shows that gingival bleeding was not significantly different ($P > .400$) on the basis of whether the patient did or did not demonstrate clinical tooth mobility.

Number of Teeth.—There is some evidence to indicate that periodontal status is related to the number of teeth.¹⁴ It would, therefore, seem possible that gingival bleeding might also conceivably be associated with the number of teeth. Therefore, the patients in this study were grouped according to whether there were 25 or more versus less than 20 teeth. Table 4 shows that gingival bleeding was not significantly different in the two groups ($P > .200$).

Systemic Factors.—A host of systemic factors have been reported as possible agents in the aetiology of gingival bleeding. Some of these have been investigated in this survey. Consideration is given to four, including: (1) trimester analyses, (2) gravida, (3) citrus intake, and (4) vitamin supplementation.

Trimester Analyses.—Table 5 analyses the relationship of gingival bleeding to gestation trimester. An analysis of all the possible trimester combinations discloses that there is no statistically significant differences during gestation.

Gravida.—There is some evidence to indicate that, with increasing gravida, there is increasing gingival bleeding.¹⁵⁻¹⁷ Table 5 analyses gingival bleeding in the primigravida versus individuals having five or more pregnancies. There is no statistically significant difference between the groups ($P > .100$).

Citrus Intake.—The statement appears in the literature that gingival bleeding is related to ascorbic acid status. Further, there is general agreement that there is a high positive correlation between orange juice intake and ascorbic acid status. Accordingly, the patients in this series with no citrus intake versus those with citrus consumption were compared (Table 5). On a mean basis, gingival bleeding is about one and one-half times as frequent in the group without citrus consumption. However, there is no statistically signifi-

TABLE 5 Gingival bleeding and pregnancy state in the light of possible systematic aetiological factors: trimester analysis, gravida, citrus intake, and vitamin supplementation.

Factor relationship	Number of patients	Mean gingival bleeding score and S.D.	P
First trimester	15	.73 ± .68	.500
Second trimester	120	.72 ± .54	
Third trimester	193	.76 ± .57	
First trimester	15	.73 ± .68	>.400
Second trimester	120	.72 ± .54	
Third trimester	193	.76 ± .57	
Primigravida	84	.78 ± .60	>.100
Multigravida*	102	.65 ± .62	
No citrus intake	203	.79 ± .62	>.200
Citrus intake†	80	.70 ± .64	
No vitamin supplementation	334	.76 ± .56	<.025
Vitamin supplementation	26	.50 ± .50	

*5 or more

†5 or more glasses per week

cant difference between the groups as shown by a $P > .200$.

Vitamin Supplementation.—A number of individuals in this study took, on their own, multivitamin tablets one to three times daily. An analysis of the subjects with no vitamin supplementation versus vitamin supplementation discloses a considerable mean difference. It is clear that there is a statistically significant difference between the two groups ($P < .025$). In other words, gingival bleeding was significantly less in the vitamin-supplemented group.

Local and Systemic Factors.—There are certain factors which may be regarded as aetiological agents for gingival bleeding, and whose action may be either systemic or local. Three such items were studied in this survey, including: (1) age, (2) cigarette consumption, and (3) race.

Age.—It is generally held that periodontal pathosis and gingival bleeding are greater in older age groups. Hence, the subjects in this survey were divided into two categories on the basis of age. An examination of Table 6 shows that the

TABLE 6 Gingival bleeding and pregnancy state in the light of possible aetiological factors operating locally and systematically: age, smoking, and race.

Factor relationship	Number of patients	Mean gingival bleeding score and S.D.	P
10 to 20-year old patients	118	.87 ± .66	<.025
25 to 35-year old patients	100	.65 ± .66	
No cigarette consumption	243	.79 ± .62	>.100
Cigarette consumption*	30	.57 ± .69	
Non-white	251	.76 ± .57	.500
White	112	.71 ± .63	

*20 or more cigarettes daily.

25- to 35-year olds have significantly less gingival bleeding ($P < .025$) than the younger age group.

Cigarette Consumption.—Evidence appears in the literature that tobacco may be a local and/or systemic irritant and may thus interfere with periodontal health.¹⁸⁻²² Therefore, an analysis was made of those patients with and without cigarette consumption. It is clear from Table 6 that there is no great difference between the two groups.

Race.—Table 6 shows that gingival bleeding in the Negro and Caucasian groups is not markedly different ($P = .500$).

DISCUSSION

Unquestionably there does not appear to be a definite relationship between gingival bleeding and the pregnancy state. In other words, the evidence derived from this study indicates that, during gestation, the possibility for gingival bleeding is not greater than observed during the postpartum period. Thus, the data in this study are at variance with

other published reports.¹ However, the possibility prevails that gestation summated with other local and systemic factors may be contributing to gingival bleeding.

For this reason, a number of local and systemic agents were studied. Among the three possible local aetiological factors (toothbrushing, periodontal status, and number of teeth) only the PMA index correlated with gingival bleeding. In other words, the patients with the worst periodontal status (as measured by the PMA index) showed the greatest amount of gingival bleeding. A number of variables which conceivably may operate systemically to contribute to gingival bleeding were also studied, including the gestation trimester, gravida, citrus intake, and vitamin supplementation. Of these factors, a distinct and significant relationship can be demonstrated between those patients with and without vitamin supplementation. Put another way, only vitamin supplementation seems to be an important corollary. Finally, several factors which may be operating either locally or systemically in the genesis of gingival bleeding were also studied. Specifically, age, cigarette consumption, and

TABLE 7 Significant relationships between pregnancy and possible aetiological factors for oral pathosis.

Aetiological factor	Pregnancy and tooth mobility ¹⁶	Pregnancy and periodontal status ¹⁷	Pregnancy and gingival bleeding
Pregnancy	<.001	NS	NS
Trimester analysis	NS	NS	NS
Gravidity	<.001	<.025	NS
Periodontal status	<.010		<.001
Vitamin supplementation	<.001	NS	<.025
Toothbrushing	NS	<.025	<.005
Tooth mobility		<.001	NS
Citrus consumption	<.001	NS	NS
Race	<.010	NS	NS
Age	NS	<.050	<.025
Number of teeth	NS	NS	NS

NS = Not significant

race were analysed. It is of interest that only age correlates with gingival bleeding.

There is reason to believe that gingival bleeding may actually be multicausal in origin.^{23,24} That is to say, probably more than one factor is operating to determine whether this particular oral finding occurs. An examination of all of the possible combinations of factors studied shows that the younger pregnant patient who does not brush her teeth, who smokes, does not take vitamin supplements, and gives no history of citrus intake is the type of individual most likely to demonstrate gingival bleeding. All of these items suggest a combination of systemic and local operating elements in the possible genesis of gingival bleeding.

Previous publications have centered upon the problem of pregnancy and tooth mobility²³ and periodontal status.²⁴ Table 7 outlines the significant relationships in this and the preceding two reports. Four points deserve particular mention. Firstly, more items (on the left) are, in the main, related to pregnancy and tooth mobility than to periodontal status and gingival bleeding. Secondly, no one factor (on the left) relates significantly to all three. Thirdly, some of the variables (trimester, number of teeth) show no correlation. Lastly, in this study of gingival bleeding, the significant relationships, in decreasing order, are periodontal status, toothbrushing and vitamin supplementation.

SUMMARY

1. Three hundred and sixty-six pregnant and postpartum patients were studied in five obstetrical clinics in Birmingham, Alabama.

2. A definite relationship between pregnancy and gingival bleeding could not be demonstrated. In other words, pregnant and postpartum individuals showed the same frequency of this particular clinical finding.

3. Of those possible local aetiological factors investigated, toothbrushing and the periodontal status seem to correlate with the presence of gingival bleeding.

4. Of those possible systemic aetiological factors studied, only vitamin supplementation seemed to be an important variable.

5. Only one of the three factors investigated (age) which may be operating either locally or systemically could be shown to bear a significant relationship to the genesis of gingival bleeding.

6. The evidence suggests that gingival bleeding may well be the result of the interplay of a host of factors.

RÉSUMÉ

On a observé, dans cinq services d'obstétrique de Birmingham, Alabama, trois cent trente-six patientes enceintes ou qui venaient d'accoucher.

On n'a pas pu établir de relation entre la grossesse et le saignement des gencives. En d'autres termes, les gencives des femmes enceintes et de celles qui venaient d'accoucher manifestaient la même apparence clinique. Le brossage des dents et l'état des tissus périodontaires, parmi les facteurs étiologiques locaux qui furent étudiés, ont semblé avoir des rapports avec le saignement des gencives.

Parmi les influences constitutionnelles possibles, susceptibles de jouer un rôle dans cette pathologie, seule la vitaminothérapie a semblé être un facteur important. Seul, l'âge, parmi les trois facteurs susceptibles d'influencer l'état des gencives, localement et constitutionnellement, a paru avoir un rapport avec l'étiologie du saignement des gencives.

Ces observations laissent croire que le saignement des gencives est la résultante de plusieurs facteurs qui exercent simultanément leur action les uns sur les autres.

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1919 Seventh Avenue South

Two Orthodontic Appliances: The Sliding Bite Plate and the Bite Director

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The following two appliances have been extensively used by the author for the retraction of protruding anterior teeth.

SLIDING BITE PLATE

This appliance is a bite plate split horizontally into anterior and posterior sections. This permits the anterior bite rim

to slide back with the anterior teeth, being itself supported by the main posterior body of the plate. If expansion is required in the maxilla, or if the plate is used in the mandible, the posterior component consists of two independent sections which may be united by a lingual arch.

The following metallic components are employed:

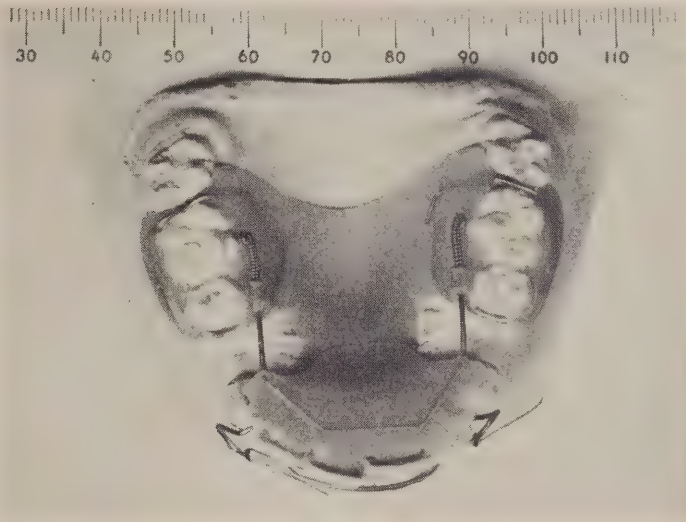


FIGURE 1
Sliding bite plate.

.029 inch wire sliding in .036 inch tubes
.010 inch arbor wound springs, 12 mm.
long, compressed 1 mm.

.029 inch wire (labial component)

The teeth must be carefully cleaned before an impression is taken and all wires must be heat-treated.

The appliance is activated by compressing the springs 1 mm. at six weekly intervals. The front of the posterior section is trimmed proportionately where it abuts the palate. A head gear is applied by adding two buccal tubes to the posterior section.

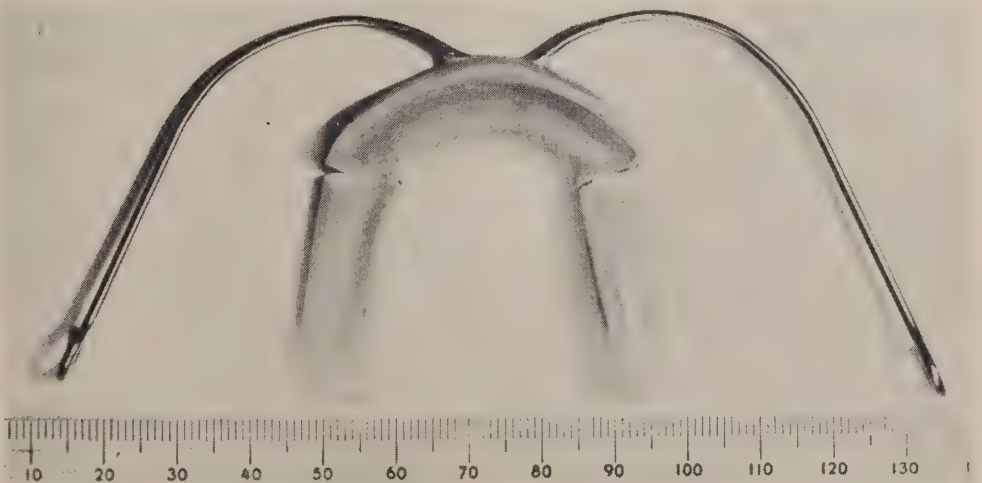


FIGURE 2 Bite director.

BITE DIRECTOR

This is an adaption of a monobloc appliance, using a headgear with a free sliding maxillary rim designed also to achieve expansion. Pressure is applied to the maxilla from a headgear or to the mandible from a cervical strap. A fitted mandibular extension may be added where the mandibular retraction or tongue thrust swallowing habit is severe. Where maxillary expansion is required, the mandibular extension may be joined to the anterior section alone.

.063 inch or .055 inch wire is used. The posterior legs are laterally adjusted.

RÉSUMÉ

L'auteur a souvent utilisé, pour distaler les dents antérieures, les deux appareils décrits plus bas.

La plaque d'occlusion inclinée est une plaque divisée en deux sections: antérieure et postérieure. Cet arrangement permet à la partie antérieure, qui est maintenue en place par la partie postérieure, de glisser en arrière en entraînant les dents antérieures. La partie postérieure, si le maxillaire doit être élargi ou si la plaque est employée pour la mandibule, est faite de deux sections indépendantes qui peuvent être réunies par une arche linguale.

Les structures métalliques de cet ap-

pareil se composent comme suit: (1) fils de .029 pouces glissant dans des tubes de .036 pouces; (2) ressorts enroulés, de 12 mm. de longueur, comprimés 1 mm.; et (3) fils de .029 pouces (pour la partie labiale).

Les dents doivent être nettoyées et les fils chauffés avant de prendre l'empreinte.

L'appareil, à des intervalles de six semaines, est mis en acte en comprimant les ressorts à 1 mm. L'avant de la portion postérieure est ajusté, en le meulant, quand il bute sur la route palatine. On installe un casque en ajoutant deux tubes à la partie labiale de la portion postérieure.

L'ajusteur d'occlusion est un appareil monobloc qui s'utilise avec un casque et un boudin incliné libre au maxillaire supérieur, conçu pour créer de l'expansion.

La pression est appliquée au maxillaire en se servant d'appui sur le casque ou sur la mandibule par une courroie cervicale. On peut exercer une extension mandibulaire, quand celle-ci est très reculée ou quand, au cours de la déglutition, la langue a l'habitude de pousser les dents. La portion mandibulaire, quand il faut élargir la mandibule, peut être jointe seulement à la portion antérieure. On emploie du fil de .063 ou .055 pouces. On ajuste les bras postérieurs sur les côtés.

200 St. Clair Ave. West

Board of Governors • The Board of Governors of the Canadian Dental Association is composed of members selected by dental organizations in all ten provinces. The Board meets annually just before the national convention of the Association. Any member of the Canadian Dental Association may participate in the Board's annual meeting. Canadian dentists are urged to avail themselves of this opportunity to participate in the affairs of their profession.

EDITORIALS

Vancouver: Place of Decision

For the second time in a decade the Canadian Dental Association has held its annual meeting in Vancouver. This modern metropolis on the shores of the Pacific Ocean is the western pivot of the economic, scientific and cultural life of Canada. Nestling between the mountains and the ocean, the city has its own special charm and attraction as evidenced by the large number of dentists and associated groups in attendance. Thus the 61st annual meeting of the Canadian Dental Association probably surpassed in every respect the most optimistic expectations of its organizers.

The convention was fortunate in having at its disposal Vancouver's ultramodern Queen Elizabeth Theatre. In this superb setting the scientific papers aroused lively discussion; the quality and quantity of various other professional and commercial exhibits were remarkable; and the hospitality of British Columbia's dentists left little wanting. All who were privileged to attend the meetings are indebted to the officers who assumed responsibility not only for the organization of the convention but also for many other matters essential to the conduct of such meetings.

The Board of Governors meeting which preceded the convention saw a full discussion of matters affecting the profes-

sion. A comprehensive report will be found in the *Transactions* which will be distributed to every member of the Association in due course. Three items, however, are singled out here on account of their special significance.

First, there was the Board's decision to proceed toward the incorporation of a Royal College of Dentists of Canada. This proposed national organization to establish qualifications and examinations for dental specialties is without precedent in our profession. It would be idle to pretend that the decision was universally popular, but it was taken in what were believed to be the best interests of the profession after a full and frank discussion.

The decision to establish a Canadian Fund for Dental Education has its own special significance. The purposes of this Fund are simple and clearcut: to promote the advancement of dental education generally, to further the qualifications of dental teachers, and to aid meritorious dental students through an interest-free revolving loan fund. The original stimulus in this regard came from the dental supply industry whose members approached the dental profession and offered financial assistance on several occasions in recent years. To them the Canadian Den-

tal Association acknowledges a debt of gratitude for this tangible support.

Undoubtedly, the activities of the Royal Commission on Health Services exercised a profound influence upon the Board's deliberations this year. Beginning in Halifax on October 30, 1961, the Commission conducted a series of public hearings across Canada at which the Canadian Dental Association as well as other dental groups in various provinces submitted briefs. The preparation of the Association's brief engaged the attention of the Executive Council's steering committee and headquarters staff for many months. They consulted the Association's councils, committees and specialty sections in order that the national submission should be a composite of the profession's attitudes towards dental health services in Canada. The thanks of the Canadian Dental Association are due to the hard-working individuals who contributed their time and effort to the production of the profession's appraisal of Canada's dental health needs.

It is true that the Association's brief contains factual statements and supporting evidence together with proposals based on

adopted policy. But it must not be concluded that dentistry's task is now done. The decisions of the Royal Commission are yet to come and they will be based on presentations submitted by other organizations as well as those of the dental profession. Perhaps the large number of presentations from lay groups is noteworthy and the attention devoted to dental health is indicative of public concern in this area of health care.

All of this suggests that the coming year may well be a year of decisions. Dentists are inextricably involved in the forces arising from the technological and socio-economic changes which now sweep our society. They cannot and should not attempt to halt these. The constructive way of dealing with change is to adjust voluntarily before solutions impose themselves. If we foresee change soon enough, we have some chance of influencing it and directing it into constructive channels.

This has been a guiding principle for the Canadian Dental Association. As a rational concept, it was very much in evidence throughout the annual meeting at Vancouver. It merits the understanding support of every member of the dental profession in Canada.

Further Thoughts on Recruitment to the Profession

The following comments made by Dr. K. V. Randolph of Morgantown, West Virginia, to the annual meeting of the American Association of Dental Schools in March of last year are worthy of attention:

"Four more years of studying, talking, and writing about (recruitment) without an organized type of action which can bring results will only make the problem more acute. Worst of all, inaction will place

the dental profession in a position of not meeting the health responsibilities for which it is obligated, and our rights as a profession may be challenged."

Among other things, Dr. Randolph advocates an organized system of making contact with parents, teachers and guidance counsellors to keep them informed of dentistry's manpower and of the attributes of the profession. These people, he says, should be provided routinely with

literature explaining opportunities in dentistry. He suggests that contact with students should begin at the Grade nine level.

The author also emphasizes the need to obtain the co-operation of all individual dentists, although they will need help in guiding young people toward dentistry. He suggests that information kits be supplied to individuals by local recruitment committees.

Dr. Randolph believes, as does the National Recruitment Committee of the Canadian Dental Association, that den-

tists must accept the fact that their recommendation may not always coincide with policies of dental school admission committees. This does not, however, detract from the importance of sustained recruitment effort. Only through the individual efforts of every dentist can recruitment realistically express the dedication of the profession. By offering to every qualified student the rewards of intellectual gratification and humanitarian service, dentistry can promise much for the future health of the nation.

K.L.C.

BUREAUX, COMMITTEES AND COUNCILS

Dental Personnel in Canada, 1962

Bureau of Economic Research

Over the past decade the population of Canada has increased twice as rapidly as the number of dentists. For each dentist, there are now 3,108 people. Last year's dentist-population ratio was 1:3,037.

There were 5,868 dentists registered in Canada at the beginning of this year. Ninety-six of these dentists are women.

British Columbia has the most favourable 1962 ratio (1:2,406) while Newfoundland has the worst ratio (1:10,648). For the second consecutive year, more dentists moved to Manitoba than to any other province.

Dentists employed full-time in health services number 248. There are 83 practising dental hygienists.

TABLE 1 Dentists registered in Canada, 1962.

Province	Men	Women	Both
Newfoundland	41	2	43
Prince Edward Island	29	0	29
Nova Scotia	187	3	190
New Brunswick	123	1	124
Quebec	1,403	14	1,417
Ontario	2,428	56	2,484
Manitoba	282	1	283
Saskatchewan	191	2	193
Alberta	428	6	434
British Columbia	660	11	671
Canada	5,772	96	5,868

TABLE 2 Changes in dental registers during 1961.

Province	Deleted from register			Added to register
	Deaths	Retirements	Relocated	
Newfoundland	0	0	1	3
Prince Edward Island	0	0	1	0
Nova Scotia	3	3	6	6
New Brunswick	0	3	0	6
Quebec	7	21	13	49
Ontario	16	24	6	86
Manitoba	8	3	5	15
Saskatchewan	2	2	1	6
Alberta	6	4	5	29
British Columbia	4	3	8	25
Canada	46	63	46	225

TABLE 3 Relocation of Canadian dentists during 1961.

To		Nfld.	P.E.I.	N.S.	N.B.	P.Q.	Ont.	Man.	Sask.	Alta.	B.C.	U.S.A.	Elsewhere	Total
From														
Nfld.							1							1
P.E.I.			1											1
N.S.				1			2	1		2				6
N.B.														0
P.Q.			1				4	4		1		1	2	13
Ont.									1			3	2	6
Man.									1	2		2		5
Sask.											1			1
Alta.							1	2			2			5
B.C.						1		2				3	2	8
TOTAL		0	0	2	1	1	8	9	2	5	3	9	6	46

TABLE 4 Population per dentist and dentists per 10,000 population, 1962.

Province	Population per dentist	Dentists per 10,000 population
Newfoundland	10,648	.9
Prince Edward Island	3,608	2.8
Nova Scotia	3,879	2.6
New Brunswick	4,822	2.1
Quebec	3,712	2.7
Ontario	2,511	4.0
Manitoba	3,257	3.1
Saskatchewan	4,794	2.1
Alberta	3,069	3.2
British Columbia	2,406	4.1
Canada	3,108	3.2

Population per Dentist

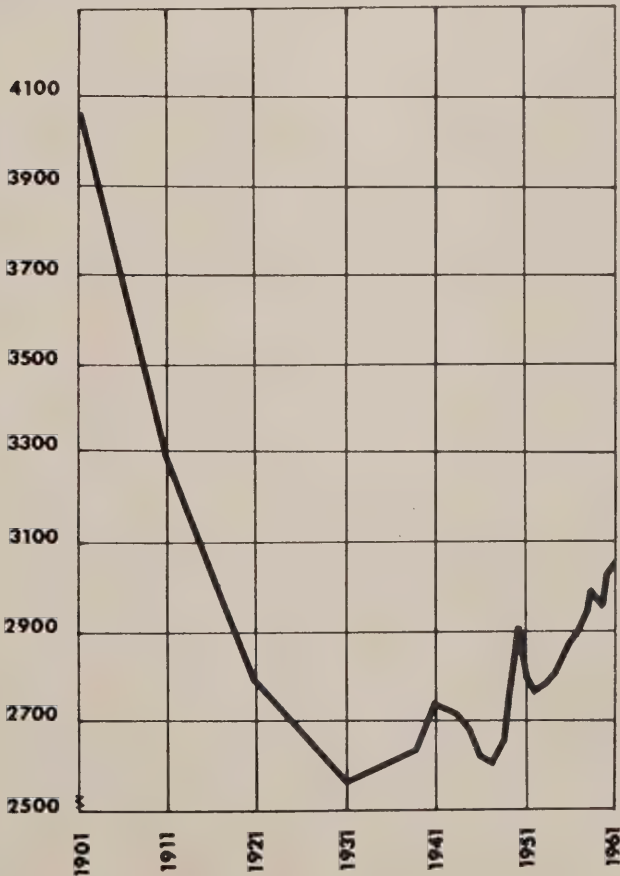


FIGURE 1 Population per dentist, Canada, 1901-1961

TABLE 5 Absolute increase in dentists and per cent increase in dentists and population, by province, 1938-1962 and 1952-1962.

Province	Increase since 1938			Increase since 1952		
	Dentists		Population Per cent	Dentists		Population Per cent
	No.	Per cent		No.	Per cent	
Nfld.	24	126.3	NA	22	104.8	26.7
P.E.I.	— 1	—3.3	12.5	0	0.0	6.3
N.S.	21	12.4	34.2	—6	— 3.1	14.7
N.B.	14	12.7	36.8	14	12.7	15.9
Que.	543	62.1	67.4	209	17.3	29.7
Ont.	552	28.6	71.5	330	15.3	35.6
Man.	32	12.7	28.9	22	8.4	18.7
Sask.	—17	—8.1	.3	—25	—11.5	11.2
Alta.	198	83.9	71.6	106	32.3	41.8
B.C.	309	85.3	114.6	125	22.9	39.8
Canada	1,675	39.9	65.1	797	15.7	30.2

TABLE 6 Full-time dental specialists, 1962.

Specialty	Number of specialists										
	Nfld.	P.E.I.	N.S.	N.B.	P.Q.	Ont.	Man.	Sask.	Alta.	B.C.	Total
Orthodontics	0	0	4	2	26	67	5	2	10	11	127
Oral surgery	0	0	2	0	8	34	4	0	4	7	59
Periodontics	0	0	1	0	4	16	1	0	0	2	24
Paedodontics	0	0	1	0	0	6	1	0	2	7	17
Total	0	0	8	2	38	123	11	2	16	27	227

TABLE 7 Dental hygienists, 1962.

Province	Number practising
Newfoundland	0
Prince Edward Island	0
Nova Scotia	5
New Brunswick	0
Quebec	0
Ontario	58
Manitoba	1
Saskatchewan	7
Alberta	4
British Columbia	8
Canada	83

TABLE 8 Dentists employed in health services, 1962.

	Nfld.	P.E.I.	N.S.	N.B.	P.Q.	Ont.	Man.	Sask.	Alta.	B.C.	Total
Dental schools											
Full-time	0	0	5	0	17	15	9	0	11	0	57
Half-time	0	0	0	0	8	5	3	0	39	0	55
Hospital service											
Full-time	0	0	3	2	6	24	1	2	7	10	55
Half-time	0	0	0	0	40	5	0	0	0	14	59
School dental service											
Full-time	0	0	1	3	15	32	4	0	5	4	64
Half-time	0	0	2	1	5	59	0	1	3	1	72
Public health service											
Full-time	2	2	2	2	12	9	4	1	7	31	72
Half-time	0	0	0	0	0	0	1	0	1	0	2
Total											
Full-time	2	2	11	7	50	80	18	3	30	45	248
Half-time	0	0	2	1	53	69	4	1	43	15	188

TABLE 9 Dentists employed full-time by federal health departments, 1962.

National Defence	164
National Health and Welfare	23
Veterans Affairs	36
Total	223

Minimum Requirements for the Approval of a School of Dental Hygiene

Council on Education

At the annual meeting of the Council on Education of the Canadian Dental Association held in March 1961 a resolution was passed establishing a sub-committee to set forth the minimum requirements for a school of dental hygiene. This action grew out of the fact that two new programs in dental hygiene

had been established, and it was deemed expedient, for the guidance of those schools still contemplating programs in dental hygiene, to assess and make recommendations for the approval of such programs.

Among the duties of the Council on Education are:

(a) To give study to all matters relating to dental education;

(b) To evaluate the various forms of dental education and to recommend revisions when necessary;

(c) To discuss and recommend alterations in all forms of education for the improvement and welfare of all personnel in dentistry in order to produce personnel equipped with adequate knowledge to fulfil all the requirements of the practice of dentistry and to take their proper positions in society as a whole.

Under authority of these duties the Council decided to outline the requirements for the training of dental hygienists or auxiliaries. In establishing such requirements the Council is careful to assert that staff will not be coerced into following a strict pattern of study. The school will be encouraged under the guidance of the program outlined herein to develop in such a manner as to reach the general aims and objectives of the education involved, which are to qualify auxiliary personnel to perform all those functions satisfactorily which the law permits them to do.

Under these conditions the school shall come under the direction and supervision of the faculty of dentistry.

ADMISSION REQUIREMENTS

A candidate for admission to an approved course for dental hygienists must meet the general admission requirements of the university of which the school is an integral part.

Subjects which should be included among those required for admission are:

(a) English or French.

(b) Mathematics or Latin.

(c) Two of Physics, Chemistry, Botany, Zoology.

(d) Other subjects sufficient to meet general admission requirements of the university are chosen by the candidate. Chemistry is strongly recommended if not chosen under (c).

INSTRUCTION

The *Policy Statement on Auxiliary Personnel* of the Canadian Dental Association is as follows:

"Developments in the field of health services have become accelerated greatly during

recent years. An increased demand for dental services exists and improved economic conditions have contributed to the demand. The public pressure for increased health services is signified by the activity and proposed actions of government in the health services field. All of which presupposes a real need to search ways and means of supplying adequate dental services under acceptable conditions for the public. The development and employment of auxiliary personnel in a satisfactory manner represents a large factor in the solution of the problem."

To conform with this policy the Council sets out a two-year program for the training of personnel for the practice of dental hygiene. The course shall consist of approximately 1,600 hours to be so scheduled as to provide a program of lecture, laboratory and clinical procedures which will not interfere unduly with the time required by the student for independent study, for planned reading, for preparation of reports and for time to think a problem through to a logical conclusion.

SUBJECTS OF STUDY

The subjects of study for a two-year course in dental hygiene have already been fairly well standardized by experience in Canada and elsewhere. The following list, although not exhaustive, represents the main core of subjects which the Council expects to find in an approved school: anatomy, bacteriology, biochemistry, clinical practice, dental histology, dental hygiene, dental materials and techniques; dental prophylaxis; dental public health; English literature and composition; library and office procedures; nutrition, pathology; pharmacology; physiology; psychology; radiology; and sociology.

The content of these subjects and the number of hours devoted to each must be determined by the staff so that a well rounded program in dental public health is assured, and that graduates will be able at once to take their proper place in a public health centre or with a practising dentist.

ORGANIZATION AND FINANCIAL SUPPORT

The funds necessary for the support of the school shall be incorporated as an integral part of the budget of the faculty of dentistry,

and the organization of the school and the staff will be under the direction of the dean.

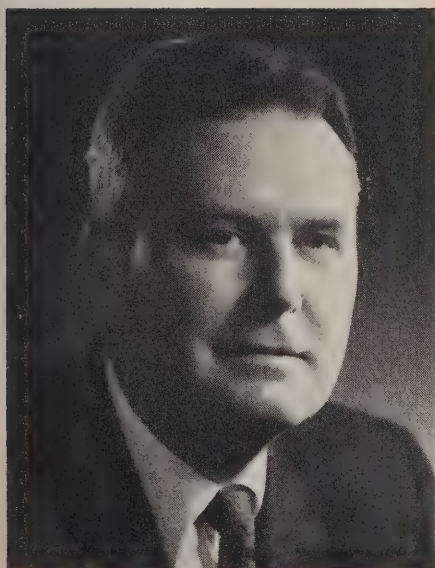
LIBRARY

The same care in selecting library books and periodicals by the parent institution should be exercised on behalf of the school of dental hygiene. The library should be readily accessible and students should be allowed some free periods in their time-table to make use of it.

GENERAL COMMENTS

The main concern of the Council in the field of dental hygiene is the improvement of public dental health services. Anything less than the program set out here would not produce the type of auxiliary personnel which is in such demand at the present time. Pioneers in this field are to be highly commended for their accomplishments, and it is the hope of the Council that this report will give a further impetus to expansion of auxiliary services so helpful to the dental profession in their efforts to provide the highest quality of dental public health.

DENTISTRY IN THE NEWS



Ashley & Crippen

The Association

M. V. J. KEENAN

INSTALLED AS PRESIDENT

Dentists from across Canada gathered at Vancouver for the 61st annual meeting of the Canadian Dental Association, June 3-6.

The annual meeting of the Board of Governors, held from May 30 to June 2, preceded the convention. The convention delegates were welcomed to the city by Mayor A. T. Alsbury. Dr. L. W. Morrey of Chicago was present as the official representative of the American Dental Association.

M. Vincent J. Keenan, president of the Canadian Dental Association.

At the noon luncheon on June 4, M. V. J. Keenan of Sudbury, Ontario was installed as president of the Association, succeeding William Miller of Vancouver. Born in Sault Ste. Marie, Ontario, Dr. Keenan graduated from the Faculty of Dentistry, University of Toronto in 1929, and has been in general dental practice since then. He is a past president of the Royal College of Dental Surgeons of Ontario (1958-60) and has been a member of the Board of Governors of the Canadian Dental Association since 1955.

J. Zimmerman



Matthews

J. Zimmerman of Calgary was named president-elect of the Association. Dr. Zimmerman has also been a member of the Board of Governors, representing the Alberta Dental Association.

Named as members of the Executive Council were: R. Langlois of Quebec City, P. S. Christie of Halifax, J. P. Coupland of Ottawa, and W. J. Riley of Winnipeg.

Honorary membership in the Canadian Dental Association was conferred upon Emery Coe Jones of New Westminster, British Columbia. The British Columbia Dental Association was the host organization for the joint meeting. Local arrangements for the meeting were made by Vancouver dentists acting under the direction of L. F. Marshall, convention chairman.

ACTIONS TAKEN BY THE BOARD OF GOVERNORS AT VANCOUVER

At the opening of the 1962 meeting of the Board of Governors in Vancouver, the members stood for one minute of silence in memory of Association members who died during the past year.

Detailed consideration was given to reports of Association bureaux, councils, committees and sections. These reports described the past year's activities of the various agencies together with their recommendations to the Board of Governors. As a result the Board took several important actions and adopted certain policies on behalf of the Association. Among the more important of these were the following:

The Board accepted the recognized two-year curriculum in dental hygiene as the basis for such instruction in Canada, and recommended that studies be continued to ascertain whether the present duties of dental hygienists might be broadened. The Association is also prepared to render assistance to the possible formation of a national association of dental hygienists.

The Board approved the establishment of a Canadian Fund for Dental Education. The objectives of this fund are to assist in the advancement of dental education, to further the elevation of qualifications of dental teaching personnel and, where necessary, to assist meritorious dental students through an interest-free revolving loan fund. The Board authorized the allocation of \$5,000 to this fund.

The Executive Council was instructed to consider formal application by the Association for a seat on the Canadian Council on Hospital Accreditation. This seat will cost \$4,000 annually.

The Executive Council was also instructed to proceed toward incorporation of a national organization to establish qualifications and examinations for dental specialties. This proposed body is to be known as the Royal College of Dentists of Canada.

Consideration and approval were given to the revised by-laws of the Section on Dentistry for Children, the pilot group purchase dental care plan for Canadian Dental Association headquarters personnel, minimum requirements for schools of dental hygiene, and the conduct of a teaching conference to be held at the University of Manitoba later this year.

The Council on Ethics was asked to study the issuing by a dentist of certificates of oral health which enable patients to acquire services from persons other than a dentist. This matter relates to the activities of dental mechanics in Alberta and British Columbia.

Noting that the Association and some of its corporate members offer various forms of insurance coverage to dentists, the Board instructed the Executive Council to engage expert advice in order to examine the entire field of insurance as it applies to the dental profession.

Approval was given to representation of the federal dental services on the Board of Governors. Appropriate amendments to the present by-laws will be effected in time for the 1963 meeting of the Board.

The Executive Council was requested to study ways and means of enabling the Council on Legislation to discharge all its functions in accordance with that council's terms of reference.

In view of growing concern for hospital dental services, the Council on Education was urged to consider training in hospital procedure as a subject for an early teacher-training conference sponsored by that council. The Board decided to discontinue the Comité de Rédaction of the French Section of the *Journal of the Canadian Dental Association* in view of the recent appointment of three associate editors to that section of the Journal. Also discontinued is the Nomenclature Committee. Its responsibilities are now transferred to the editor of the Journal.

Other actions taken by the Board of Governors included the appointment of Don W. Gullett, H. W. Reid and J. W. Coupland as official delegates to the 1962 congress of the *Fédération Dentaire Internationale* at Cologne and the confirmation of J. D. Purves as chairman of the convention committee for the 1963 annual meeting of the Canadian Dental Association at Toronto.

EXECUTIVE COUNCIL MEETS IN VANCOUVER

The Executive Council of the Canadian Dental Association met on June 3 in Vancouver, immediately following the annual Board of Governors' meeting. Present were W. Miller, M. V. J. Keenan, R. Langlois, J. Zimmerman, P. S. Christie, J. P. Coupland, D. M. Dewis and W. J. Riley. Association secretary Don W. Gullett and other staff members were also in attendance.

On the agenda were several items referred to the Council by the Board of Governors, among them (1) future policy concerning financial arrangements with Association sections with regard to annual meetings, (2) preliminary steps in a study of insurance plans for the dental profession, (3) acquisition of a seat on the Canadian Council on Hospital Accreditation, (4) legislation regarding the proposed Royal College of Dentists of Canada, (5) more effective discharge of the functions of the Council on Legislation, and (6) institution of the proposed Canadian Fund for Dental Education.

The Council took appropriate action in each instance. The results will be considered and reported at the February 1963 meeting of the Council.

C.D.A. PAST-PRESIDENT HAILS FLUORIDATION

Opposition to fluoridation of water is completely unfounded. So said Canadian Dental Association past-president William Miller to dentists during his recent tour of dental societies in western Canada.

Three basic questions need to be answered, according to Dr. Miller. Is it safe? Is it efficient? Is it economical? Extensive studies have proved all three answers to be affirmative, he said.

C.D.A. SECRETARY WARNS PROFESSION ABOUT APATHY TOWARD FUTURE ORGANIZA- TION OF HEALTH CARE

"An attempt is being made by forceful lay organizations to make a public utility out of health services." So said Canadian Dental Association secretary Don W. Gullett addressing a luncheon on June 5 sponsored by the College of Dental Surgeons of British Columbia at the recent annual meeting of the Canadian Dental Association in Vancouver. Dr. Gullett was referring to the sizeable number of presentations to the Royal Commission on Health Services submitted by lay groups, representing large numbers of people.

Success in this aim means government administration with complete control of the profession by government. As an alternative, administration of dental services by the dental profession is only acceptable if carried out on a non-profit basis and with low administrative costs. Dr. Gullett added. Recommendation to this effect was contained in the Association's brief to the Royal Commission.

Dr. Gullett stressed how important it is for the dental profession to demonstrate at the provincial level its ability to administer dental services. At the same time he warned the profession that this period of experimentation would not last indefinitely; that, in fact, it could end rather suddenly under the pressure of public reaction.

Dr. Gullett praised dentists who are keenly aware of these problems and who try to contribute to their solution. "For the most part these are men who hold office and are up against perhaps some small phase of this problem. They are making sacrifices and need your support. None of our organizations can go far without active support of individual members," Dr. Gullett stated. Unless we can exhibit satisfactory ability to accept responsibility we could find ourselves with no alternative but to accept what is offered, Dr. Gullett concluded.

C.D.A. DELEGATES TO COLOGNE NAMED

Three official delegates will represent the Canadian Dental Association at the Fédération Dentaire Internationale congress at Cologne, Germany, this July. They are J. P. Coupland of Ottawa, and H. W. Reid and Don W. Gullett of Toronto. Many Canadian dentists are attending the congress.

EMERY COE JONES NAMED AS HONORARY ASSOCIATION MEMBER

Honorary membership in the Canadian Dental Association was conferred on Emery Coe Jones of New Westminster, British Columbia, at the annual meeting of the Association in Vancouver. Dr. Jones was born on June 20, 1879, of United Empire Loyalist parents, whose ancestors crossed the Niagara River into Canada during the American War of Independence. The family first lived in Thorold, Ontario, where they were joined by the father after his duty with "Colonel Butler's Rangers." The family later settled near Hamilton, Ontario, where Dr. Jones received his secondary school education, taking his matriculation at Waterdown, Ontario. For four years he taught in a country school, saving enough money to pay the expenses for his first year at the dental school of the Royal College of Dental Surgeons of Ontario in Toronto. During the following years he worked at various times in a dental laboratory, in a men's furnishing store, and as a chairside assistant to the late Dr. H. G. Robb of Niagara Falls, Ontario. Following

graduation and successful completion of the Dominion Dental Council examination in May 1906, Dr. Jones returned to Hamilton and opened an office in Dundas, Ontario where he practised for six years.

On June 1, 1912, Dr. Jones was married to Jessie May Fulton of Cleveland, Ohio. On the day following his marriage, he and his wife arrived in Hamilton, where for two days Dr. Jones attended the Ontario Dental Society's annual convention at Brant House, Burlington Beach, near Hamilton. As secretary of the Ontario Dental Society, his presence there was necessary. On June 4 the couple boarded a C.P.R. train for the west coast. Much to the chagrin of the bride, Dr. Jones spent most of his time quietly reading *Gray's Anatomy*, as he was writing the examination set by the British Columbia Board of Dental Examiners for the following week. Upon learning of his successful examination and registration, Dr. Jones joined the partnership of Drs. Holmes, MacSween and Jones in New Westminster, B.C. Some years later he went into practice by himself, remaining in solo practice until his retirement.



E. C. Jones

Dr. Jones built a home in New Westminster and devoted his thoughts and energies to his chosen profession and his family. He and his wife were blessed with two sons, Howard F. Jones of Vancouver, B.C. and R. Clifford Jones of Lethbridge, Alberta, and one daughter, Audrey Lucille Campbell, presently at Bralorne, B.C. There are seven grandchildren.

In 1919-20 Dr. Jones was elected a member of the Council of the College of Dental Surgeons of British Columbia representing New

Westminster and Fraser Valley — District No. 2. He was re-elected by this district for twenty-eight consecutive years. Dr. Jones was also appointed president for eight years and later became registrar-treasurer of the college for four years. Dr. Jones is also a fellow of the International College of Dentists.

After nearly five years of retirement he is now living quietly at his home in New Westminster.

president; E. A. White of Toronto, treasurer; D. G. Tanner of Toronto, registrar; H. R. MacLean of Edmonton, president-elect; and Arthur Poyntz of Victoria, past president. The meeting was held on the occasion of the annual convention of the Canadian Dental Association at Vancouver.

ALBERTA

Canada and the Provinces

CANADIAN SECTION, INTERNATIONAL COLLEGE OF DENTISTS MEETS AT VANCOUVER

L. M. Grose of Toronto was elected president of the Canadian section of the International College of Dentists at a section meeting recently held in Vancouver. Other officers elected were J. G. Ratté of Quebec City, vice

Edmonton and District Dental Society. — The final meeting of the season took the form of a "University Day Program" held on May 1. Eight table clinics were presented during the afternoon by members of the graduating class from the Faculty of Dentistry, University of Alberta, following which the students were guests of the society at the evening meeting.

The following new officers were installed: R. P. Mullen, president; D. H. MacDougall, president-elect; A. V. Calhoun, secretary; R. C. McClelland, treasurer; A. R. Urschel, public relations officer and J. Sikora, social convener. Elected as directors were G. T. Lindskoog, A. C. Thompson and B. L. Duns-worth.



R. P. Mullen, right, recently-elected president of the Edmonton and District Dental Society, receives the gavel from past president G. T. Lindskoog at the society's annual meeting, May 1.

ONTARIO

Royal College of Dental Surgeons of Ontario. — The following are some of the important subjects considered at the annual meeting of the Board of Directors of the Royal College of Dental Surgeons of Ontario, April 16-19.

The board considered a request from the provincial Minister of Health seeking opinions upon a presentation made by an Ontario branch of a national organization which seeks entitlement for its members to deal directly with the public in respect of repair of dentures. The board replied that the dentist was the only person who could assume final responsibility for any dental health services that it was not in the interests of the public to permit those unqualified by education, training, experience, or licensure to practise any aspect of dentistry.

During 1961, 22,250 children were eligible for services under the Ontario Dental Welfare Plan. Some 1,204 dentists participated and rendered dental treatment to 8,970 patients. There were 4,312 payments made directly to dentists with the average payment being \$43.13. An attempt will be made to seek extension of the plan to include within the Mothers' and Dependent Children's Allowances Act children 16, 17 and 18 years of age, their mothers, and the beneficiaries of the Department of Public Welfare over 65 years of age.

Employees of the Royal College of Dental Surgeons of Ontario are to be covered by a group purchase dental care plan on a basis similar to that established for employees of the Canadian Dental Association. Details of that plan were described in an earlier issue of the *Journal* (*J. Canad. D.A.* 28:254, April 1962).

The board strongly condemned the sale of accounts receivable by a dentist to financial organizations, whereby the dentist divests himself of further responsibilities respecting such accounts. This practice was also criticized by the Council on Ethics at the recent annual meeting of the Canadian Dental Association.

The board authorized submission of a brief to the National Dental Examining Board of Canada to suggest further areas of service to be offered by that agency. Since all Canadian dental schools have been approved by an agency of the profession (the Canadian Dental Association's Council on Education), the board believes there is no longer any need for duplication of faculty and licensing examinations. In addition the board is of the opinion that the National Dental Examining Board should examine candidates who are able to obtain qualifying

certificates from the participating licensing authority.

Other actions taken by the board include: approval of the experimental study at the Faculty of Dentistry, University of Toronto concerning the extension of services of dental hygienists; commendation to the Dental Public Health Committee of the Ontario Dental Association for their student recruitment efforts; ratification of a revised schedule of fees for services rendered under the Workmen's Compensation Act of Ontario; and the creation of an admission scholarship in the amount of \$600 to be awarded to the Ontario student entering the Faculty of Dentistry, University of Toronto with the highest grade 13 results (and having obtained first class honours).

At the urging of the board, the Department of Education recently enacted regulations under the Trade Schools Regulations Act requiring that all commercially sponsored courses for dental assistants be registered with the department. This should greatly reduce the number of abuses which were apparent when such schools were not required to be registered.

The board also agreed to provide a facility for dentists to avail themselves of a pension plan for their employees on a group annuity basis.

High School to Teach Dental Assisting. — What is believed to be Canada's first formal course for dental assistants at the secondary school level starts this September in Scarborough, a Metropolitan Toronto suburb. The course will combine practical training with general courses in grades 10, 11 and 12. Girls will become qualified as dental assistants upon completion of grade 12. Then they may continue through grade 13 or seek employment in dental offices.

Ontario Offers Bursaries to Dental Students. — The Ontario government will pay twenty medical and ten dental undergraduates bursaries of \$1,000 a year if they agree to practise in areas of the province where there is a shortage of physicians and dentists, it was announced recently. Provincial health minister Matthew Dymond told the legislature that medical students will get the bursaries for four years and dental students for three years. Complete details of the plan are not yet available.

QUEBEC

Mount Royal Dental Society. — H. Rosen, a member of the staff of the Faculty of Dentistry, McGill University, was installed as president of the Mount Royal Dental Society at a formal installation ceremony on May 1. At the same occasion G. Baer, immediate past president, was presented a gift as a token of appreciation from the society.

The other officers elected for the coming year are: D. Solomon, vice-president; L. Druckman, secretary; D. Zacharin, treasurer; Anita Mendel, assistant secretary; and M. Star, historian-archivist.

Named as members of the executive were: M. Capelle, H. Levitt, I. Lubin, B. Sedlezky, M. Schevell, E. Slapcoff, C. Solomon, and C. G. Baer (ex-officio).

UNITED STATES

Prominent Americans Support Fluoridation. —The American Dental Association has prepared a series of statements by nationally known personalities in support of fluoridation. Among the authors is Dr. Paul Dudley White, noted cardiologist, whose statement points out that consumption of fluoridated water does not harm the heart and is perfectly safe for persons with cardiac conditions. Others in the series include Dwight D. Eisenhower; George Meany, president of the A.F.L.-C.I.O.; Richard J. Daley, mayor of Chicago; and Dr. Benjamin Spock, well-known paediatrician. Intended for use in newspapers and similar publications, the series is available to groups engaged in local fluoridation efforts.

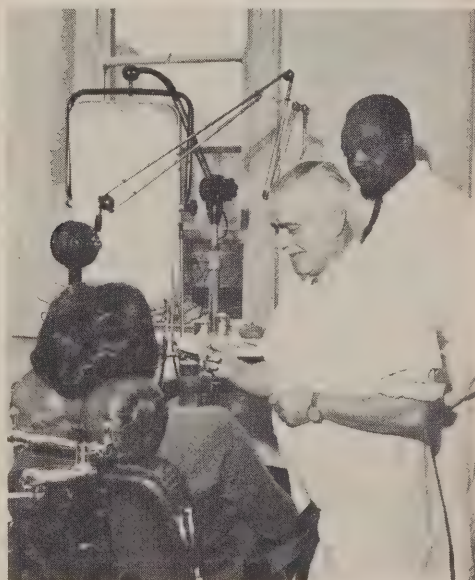
International Items

UNITED KINGDOM

Nigerian Appointed Chief Dental Officer for 26 British Schools.—A Nigerian dentist who obtained his doctorate of philosophy at McGill University, Montreal, was recently appointed principal school dental officer in Halifax, Yorkshire — the first West African to be appointed to a post of this kind in the United Kingdom.

Paul Abadom came to Great Britain in 1946. He graduated from the dental school at King's College, Durham University. After a brief period in practice in Newcastle and Portsmouth Dr. Abadom returned to Nigeria and during the royal tour of 1956, he was appointed honorary dental surgeon to the Queen.

In 1957 Dr. Abadom attended the medical school at Rochester University, New York, under a United States fellowship. There he earned an M.Sc. degree in pharmacology. He also studied at Oakridge Institute of Nuclear Studies in Tennessee, before proceeding to Canada and back to the United Kingdom.



Paul Abadom, a Nigerian dentist who earned a Ph.D. degree at McGill University, Montreal, watches while a member of his staff treats a patient in a dental clinic in Halifax, England, where Dr. Abadom is principal school dental officer.

Oral Biology Meeting Scheduled for Palm Springs, California.—The 19th annual meeting of the American Institute of Oral Biology will be held in Palm Springs, California, October 8-12, 1962 at the Hotel Riviera.

Canadians who will address the meeting include D. H. Copp, professor and head of the Department of Physiology at the University of British Columbia, Vancouver, and H. M. Worth of Vancouver, radiologist and special lecturer, Faculty of Dentistry, University of Toronto. Other lecturers include L. S. Fosdick from Northwestern University Dental School, Chicago, M. J. Glimcher of Harvard University Medical School, Boston and B. L. Wolfsohn, associate professor of Operative Dentistry, College of Physicians and Surgeons, San Francisco. Further information may be obtained from the Executive Secretary, Mrs. Marion Lewis-Meyer, 2240 Channing Way, Berkeley 4, California, U.S.A.

Periodontists to Meet in Miami.—The American Academy of Periodontology will hold its 48th annual meeting at the Carillon Hotel, Miami Beach, Florida, October 25-27, 1962. The theme of this year's program will be "Periodontics Today", it was announced. Any member of the Canadian Dental Association may attend upon the payment of a modest registration fee. Further information may be obtained from H. A. Hartman, 4187 Pearl Road, Cleveland 9, Ohio.

sponsored through the American Fund for Dental Education by the Great-West Life Assurance Company. Dr. Durand plans to pursue graduate training in periodontics at New York University College of Dentistry.

UNIVERSITY OF TORONTO

Brief to the Royal Commission on Health Services.—A \$4 million dental school capable of graduating sixty dentists a year is needed just to maintain the present ratio in Ontario of one dentist to 2,471 persons, according to a brief submitted by the Faculty of Dentistry to the Royal Commission on Health Services in Toronto, May 14.

The ratio of dentists to population has steadily worsened since 1925, when there was one dentist for every 1,773 persons, the brief stated. Unless more dentists are trained, the estimated ratio by 1980 will be 1:2,821.

Rural areas are most badly in need of dentists, yet 81 per cent of students are drawn from communities larger than 10,000 population and most graduates return there.

More dental hygienists should be trained and courses might well be established in secondary school vocational departments for dental assistants, the brief suggested. Better use of such auxiliary personnel would enable individual dentists to be more productive, Dr. R. G. Ellis, dean of the Faculty, added.

J. B. MACDONALD ADDRESSES CONVOCATION AS FIRST MANITOBA DENTISTS GRADUATE

J. B. Macdonald, dentist and new president of the University of British Columbia, received a Doctorate of Laws and gave the convocation address at the University of Manitoba on May 24 when that university's first dental graduates received their dental degrees. Thirteen men and one woman were in the final year of the dental faculty at the University of Manitoba. They were the first students to receive dental degrees from the Manitoba school, the first new Canadian dental school to be established in about forty years when it was opened officially in 1958. These graduates were also the first group of dentists to receive D.M.D. — doctor of dental medicine — degrees from a Canadian dental school.

Canadian Dental Schools

UNIVERSITE DE MONTREAL

American Fellowship Awarded.—C. F. Durand, associate in Periodontics at the Faculty of Dental Surgery, Université de Montréal, was recently granted the American Dental Association Teaching Fellowship, which is

Royal Canadian Dental Corps

the rank of captain. He was promoted to major in 1956 and had recently been granted an extension to continue serving with No. 50 Dental Unit where his wide knowledge and keen interest will be sorely missed.

Major Rose is survived by his wife Katherine and two daughters.

OBITUARY—LT.-COL. P. R. LASALLE

It is with regret that we learned of the sudden death of Lt.-Col. P. R. LaSalle, C.D., D.D.S. on April 22, 1962 in Montreal. Lt.-Col. LaSalle retired from the Royal Canadian Dental Corps in September 1956 after seventeen years service. He was born in Montreal on August 29, 1900 and graduated from the Université de Montréal in 1925. He was commissioned in the Canadian Dental Corps in October 1939 and during the war served in Canada and the United Kingdom. After the war he served in Eastern and Central Commands until 1949 when he was appointed Assistant Director of Dental Services at Army Headquarters. In 1950 he was appointed to the rank of lieutenant-colonel and made commanding officer of No. 15 Dental Company in Montreal, which appointment he held until his retirement in 1956. Since that time he has been employed by the Corps in a civilian capacity in Montreal.

Lt.-Col. LaSalle is survived by his wife Rita, one son and five daughters.

R.C.D.C. SCHOOL OFFICERS PRESENT CLINIC

Colonel C. E. Purdy, Commandant of the R.C.D.C. School, Camp Borden and two members of his staff, Commander R. R. Troxel, U.S. Navy Dental Corps exchange officer and head of the Department of Restorative Dentistry, and Major J. M. Smith presented a clinic on a one-week program for office training of dental assistants at the Ontario Dental Association convention in Toronto on May 16. The new Royal Canadian Dental Corps Exhibit which is concerned with training dental officers in their paramedical role in national survival was also displayed at this convention for the first time.

OFFICERS ON COURSES IN THE UNITED STATES

Lt.-Col. C. M. Cornish of Ottawa and Lt.-Col. R. H. G. Cunningham of R.C.A.F. Station Trenton attended a course on "Complete Dentures" at the U.S. Navy Dental School, Bethesda, Maryland.

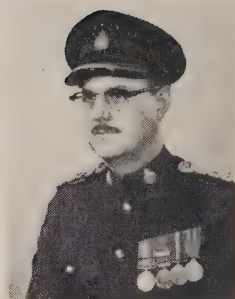
OBITUARY—MAJOR H. H. ROSE

The Corps was also saddened by the accidental death of Major H. H. Rose, C.D. Quartermaster of No. 50 Dental Unit R.C.D.C. (Militia), Halifax on April 22, 1962. Major Rose was born in Halifax on September 6, 1905 and was associated with the Maritime Dental Supply Company when he was commissioned in the Canadian Dental Corps in September 1940. During the war he served with Nos. 19, 9 and 39 Companies as a quartermaster in Canada and overseas. Following his demobilization in January 1946, he rejoined the Maritime Dental Supply Company and enrolled in the Royal Canadian Dental Corps Militia in September 1948 in

N.B.C.W. COURSE AT CAMP BORDEN

Major T. D. Cobb, Edmonton, Captain G. R. Myles, Ottawa and Captain W. A. Sugars, R.C.A.F. Station St. Hubert were candidates on a medical and dental officers' "Nuclear, Bacterial and Chemical Warfare" course held at the Canadian Forces Medical Services' Training Centre in Camp Borden in June.

Continuing the series of photographs of commanding officers of Royal Canadian Dental Corps Militia units in Canada, portrayed in this issue of the Journal are Lt.-Col. M. J. Snidal, left, of No. 57 Dental Unit, Winnipeg, and Lt.-Col. A. J. Harris, right, of No. 55 Dental Unit, London.



Public Health

ONTARIO PUBLIC HEALTH DENTISTS ELECT

A. E. Ward, dental director of the Port Arthur-Fort William Health Unit, Port Arthur, Ontario was elected chairman of the Dental Section, Ontario Public Health Association, at the thirteenth annual meeting of that association held in Toronto, May 28-31. Named as vice-chairman was B. Martinello of Cooksville, Ontario. D. Lewis, dental director of the Department of Health, Kingston, Ontario became section secretary.

At the same meeting A. B. Sutherland, dental director of the Sudbury and District Health Unit became 2nd vice-president of the Ontario Public Health Association. This means that Dr. Sutherland will likely be president of the association for the 1964-65 term.

Research

H. T. DEAN, AMERICAN FLUORIDATION EXPERT, DIES

H. Trendley Dean, an international authority on fluoridation, died on May 13 at the age of 68. Dr. Dean spent thirty years in dental research conducting pioneer studies on the effect of adding fluoride to community water supplies. He was associated with the famous "Twenty-One Cities Study" in 1942. In this study, examination of 7,257 12-14 year old children from twenty-one cities around the southern perimeter of Lake Michigan, classified according to fluoride content of the public water supply, showed that water with 1 to 1.5 p.p.m. fluoride provided caries protection with negligible risk of fluorosis.

Dr. Dean was an officer of the United States Public Health Service from 1921 to 1953. He was director of the National Insti-

tute of Dental Research (U. S. Public Health Service) from 1948 to 1953. Subsequently he served as secretary of the Council on Dental Research of the American Dental Association until 1959.

Among the numerous honours bestowed on Dr. Dean was the coveted Lasker Award of the American Public Health Association.

Among the reports was one by C. R. Castaldi, W. A. Quigley and W. Zacherl of the University of Alberta, which noted that the parents of children whose teeth have a high decay rate apparently are more inclined to vote against fluoridation of drinking water supplies than parents of children with less decay.

I.A.D.R. ANNUAL MEETING, MARCH 15-18 IN ST. LOUIS

More than 370 original research reports were presented at the 40th annual meeting of the International Association for Dental Research, March 15-18, in St. Louis, Missouri.

CHANGE OF ADDRESS

Subscribers to the *Journal of the Canadian Dental Association* should notify the Managing Director, 234 St. George Street, Toronto 5, Ontario, of their change of address before the 20th of the month, to become effective the following month.

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

ONTARIO FLUORIDATION INVESTIGATING COMMITTEE REPORT

To the Editor:

Under "Correspondence" in the January issue of the *Journal* (J. Canad., D.A. 28:49, January 1962) there appeared a letter from

Dr. S. W. Leslie as well as certain information showing that a statement attributed to him when appearing before the Morden Commission on Fluoridation was incorrect. There is no doubt that Dr. Leslie acted correctly in bringing this error to the attention of his profession.

I read this letter and, although the term 'durable' is not often used in association with dental fillings, I presumed he preferred to use this word before the Commission as it might be more informative than another expression. However, I did write Dr. Leslie relative to the term and he replied giving me the information I desired. His treatment is similar to the procedures followed by dentists in practice and I made no criticisms of his treatment.

In the April issue (J. Canad. D.A. 28:263, April 1962), there appeared a letter from Dr. C. D. Beierl. It was rather unkind and from the information I had obtained from Dr. Les-

lie, I did not believe that it was justified. Possibly Dr. Beierl had not the same information so I again wrote Dr. Leslie and he replied "The writer of the letter in the C.D.A. Journal has at no time been in contact with me, nor have I had any inquiry from him or any other member of his organization as to the word 'durable' as used by myself."

In view of these facts, one might wonder if Dr. Beierl's criticism was justified. I hope it was not an attempt to belittle Dr. Leslie because he used his right and had the principles to appear publicly before the Commission to express his beliefs.

Whether or not an individual agrees with me is not important but it is important that each be permitted to express his opinion. If more of our members exercised this right, our Association would be the better for it.

This letter is written in the interest of 'fair play.' I know neither of the individuals concerned and the extent of my correspondence with Dr. Leslie is the letters mentioned above.

S. A. Moore, D.D.S.,
326 St. George St.,
London, Ontario.

BOOK REVIEWS

PERIODONTOLOGY

G. C. Blake and J. R. Trott London, Butterworths, 1962. (Available from Butterworths & Co. [Canada] Ltd., Toronto). 224p. Illus. \$10.00

This book provides a condensed ready reference to the general subject of periodontology. In the preface the authors state that it has been written primarily for the undergraduate student and general practitioner, that it was intended to be a concise and simply worded study of the aetiology, pathology and treatment of the common gingival and periodontal diseases, and that was not intended as a text for the periodontal specialist. These comments by the authors accurately sum up the general content of the book.

Theories and advanced techniques are for the most part omitted, as is a comprehensive list of references. The text contains two hundred and seventeen pages, comprising twenty-one chapters, each dealing briefly

with a specific subject. It is well indexed. The illustrations are numerous and clear.

The purposes for which this book was written have been admirably fulfilled.

W. G. McIntosh

YEARBOOK OF DENTISTRY 1961-1962 SERIES

S. D. Tylman, D.A. Keys, J. W. Knutson, H. J. Noyes, H. B. G. Robinson and C. W. Waldron. Chicago, Yearbook Medical Publishers Inc., 1962. 463p. Illus. \$7.50

The Year Book Publishers have again contributed abstracts of the many articles appearing in the dental literature during 1961-62 and have presented them in the form of the *Year Book of Dentistry, 1961-62 Series*.

The editors include S. D. Tylman, emeritus professor of the Department of Crown and Fixed Partial Prosthodontics at the University of Illinois College of Dentistry; D. A. Keys, professor and chairman of the Department of Operative Dentistry, University of Nebraska; J. W. Knutson, professor of Preventive Dentistry, School of Dentistry, and professor of Public Health, School of Public Health, University of California; H. J. Noyes, dean and professor of Oral Surgery and Diagnosis, University of Kansas City, School of Dentistry; and C. W. Waldron, emeritus professor of Oral Surgery, University of Manitoba.

This form of review of the literature by such an august board of editors, provides the busy practitioner with a wealth of information in many fields of medico-dental sciences. The subjects covered have a practical application to practice procedures. These include chapters related to Diagnosis; Endodontics, Periodontics and Oral Medicine; Caries and Hard Tissue Lesions; Public Health; Orthodontics (80 pages of related material); Surgery and Related Pathology; and Restorative and Prosthetic Dentistry. The volume is well indexed by subjects as well as authorship and should prove to be a very handy reference book for the dentist who wishes to keep up-to-date through a planned program of continuing education. The source of the abstracts is included for those who may wish to read the original article.

The Year Book Publishers are to be commended on their worthwhile contribution to the continuing education of the busy dentist.

G. T. Mitton

A GUIDE TO DENTAL THERAPEUTICS

J. C. Macdougall and G. S. Nixon. London, Cassell and Co. Ltd., 1961. (Available from British Book Service [Canada] Ltd., Toronto). 223p. \$3.05

This book has been written by two well-known lecturers of therapeutics in Scotland. It is a short, concise book. It deals mainly with that aspect of therapeutics that is applicable to dental students and practitioners. There is no doubt that there is a place for

a number of small books on this subject. But in the case of *Dental Therapeutics*, there are disadvantages. The terminology used is essentially that of the British Pharmacopoeia and in spite of the fact that Canada uses the B.P., the Canadian dentist is in the habit of using United States Pharmacopoeia terminology. This is not misleading to the pharmacologist but may confuse the Canadian dental student and practitioner.

Some unconventional opinions are expressed in the book. For example in relation to codeine the authors state, "As an analgesic codeine is relatively ineffective even in doses of 60 mg. (1 gr.)." They claim that 16 grains of acetylsalicylic acid would be as effective. There is little evidence to support this statement. The American Dental Association's *Accepted Dental Remedies* states that "Codeine is customarily employed where a stronger analgesic than a salicylate is required." Again Beckman's *Drugs, Their Nature, Action and Use* states that "Codeine is less potent than morphine but considerably more potent than the antipyretic analgesics."

The chapter in *Dental Therapeutics* on local anaesthetics and vasoconstrictors is very superficial and cannot be considered adequate in view of the wide use of these drugs in dentistry. There is no chapter on general anaesthetics, and no chapter on the handling of emergencies which have become of extreme importance considering the increase in sensitivity or allergies to many of the substances used by practising dentists. There are no introductory chapters such as "The Actions and Uses of Drugs" or "The Nature of Drugs" — knowledge which is necessary for any understanding of dental therapeutics. This reviewer believes there are other texts available which are better adapted to our present needs.

L. E. Francis

THE DENTIST IN ART

J. J. Pindborg and L. Marvitz. Chicago, Quadrangle Books, 1960. \$12.50

This book, translated from the Danish by Hartz, is an approach to dental history using art through the ages as the medium. This is a difficult approach since in dentistry, there

appears to be little more than two themes available: the patient with his symptoms, or the dentist, his methods, dress and tools. Both subjects have been favoured extensively by caricaturists as well as many of the early great masters. And why not! "The operators for the teeth", as the predecessor of the modern dentist was termed, came from many walks of life. They ran their practices as adjuncts to other trades — barbers, blacksmiths, gem cutters and hairdressers. For the toothache, thought to be not a symptom but a disease in itself, the standard treatment was extraction. The patient was seated and attacked with bare fingers or one of a series of massive iron instruments such as the odontagra, the clavis, or the pelican. Small wonder that under the "Bills of Mortality" an average of 600 deaths a year were attributed to "teeth". Also small wonder that this was a natural subject for the artist or cartoonist of the day. With such a background it is natural that a good deal of this book is given over to this aspect of the subject. This is a thoroughly exploited theme but the authors do mix coloured plates with monochromatic reproductions to good effect. The works selected have with few exceptions, not been widely reproduced before, and so at least are new to North American readers. Of particular interest is a picture of a 5½-inch white gold vase found during an excavation in the Crimea in the 1800's. This depicts the oldest known representation of a dentist in action. The vase dates back to the third or fourth century B.C. It is true, as the authors point out, that dentistry was known in the early Egyptian periods but no pictures remain with dental motifs.

Included is a picture of a 5-inch white porcelain figure representing a Swedish sculptor's impression of pain, a child with a toothache. This tiny statue shows great charm and feeling.

Another interesting facet of the profession is shown in a lithograph dated 1839 depicting a female dentist in action, titled "She Stands her Ground". Perhaps the unfortunate results of female emancipation cannot be entirely blamed on the suffragettes.

The authors also are to be commended on their selection of modern art. Solot's work is well known and some of his better pictures are included. It is unfortunate that no Canadian work from Quebec is included. Several practitioners of the modern school flourish here. This book makes interesting reviewing but fails in its aim of showing dental history

through the medium of art. This, however, would be a formidable task.

J. V. P. Chatwin

PHYSIOLOGY OF THE SALIVARY GLANDS

A. S. V. Burgen and N. G. Emmelin.
London, Edward Arnold (Publishers) Ltd.,
1961. 279p. Illus. \$6.30

Three types of investigators with distinct objectives have contributed to our knowledge of salivary functions. Dental research workers have looked for factors in saliva that might be related to the aetiology of caries or periodontal disease. Stimulated by the work of Pavlov, experimental psychologists have utilized salivation to study conditioned and unconditioned reflexes. The third group are physiologists who have found the salivary glands useful in studying various physiological mechanisms. Two eminent physiologists from Canada and Sweden have combined to produce *The Physiology of the Salivary Glands*.

This book is valuable in that much of the extensive research in this field is brought together under one cover and critically evaluated. Any worker interested in this or related fields would find it indispensable. The authors' critical evaluation of theories of secretion that have been evolved is illuminating. Of special interest to the reviewer is the chapter on the atrophic changes that occur, with loss of function. As with skeletal muscle, marked histological changes and supersensitivity to chemical stimuli develop following denervation of the glands. We consider this book a valuable addition to the knowledge of physiological processes.

The authors present and discuss the experimental evidence, but, to a large extent, the reader must make up his own mind concerning the interpretation of the evidence. To do this would be difficult for students and general practitioners, and the book is unsuitable for them. Nevertheless, we consider this book a valuable addition to the knowledge of physiological processes.

W. J. Linghorne

IN MEMORIAM

WILLIAM HERBERT BOWLES — Dr. W. H. Bowles of Orangeville, Ontario died on May 7, 1962. He was 88. Born in Peel County, Dr. Bowles received his early education in London, Ontario. In 1899 he graduated from the School of Dentistry of the Royal College of Dental Surgeons of Ontario. Dr. Bowles also was a life member of the Royal College of Dental Surgeons. He is survived by his sister, Mrs. Annie Pearson of Toronto.

JOHN GEORGE COLERIDGE — Dr. J. G. Coleridge of Ingersoll, Ontario died at Owen Sound, February 10, 1962. He was 87. Born in Ingersoll in 1875, Dr. Coleridge graduated from the Philadelphia Dental College and practised in Philadelphia and in western Canada for some years, later moving to Windsor, Ontario. A resident of Flesherton for the past six years, Dr. Coleridge had been in failing health for some time. Surviving besides his wife, Muriel, is one sister, Mrs. Margaret McDonald of Ingersoll. A brother, James Coleridge, predeceased him.

LEO A. GAUDET — Dr. L. A. Gaudet of Campbellton, New Brunswick died on March 30, 1962. He was 69. Dr. Gaudet was born in Memramcook, New Brunswick in 1892. He studied at Tufts University, Boston, graduating in dentistry in 1918. Dr. Gaudet practised in Moncton, Halifax and Dalhousie before moving to Campbellton where he practised for thirty-five years. Surviving are his wife, Lucienne; a son, Benoit of Campbellton, two brothers, Omer Gaudet of Memramcook and Adrice Gaudet of Hazardville, Connecticut; and one sister, Mrs. Charles Harrington of Boston.

JOHN GILBERT HOBSON — Dr. J. G. Hobson of Vancouver, British Columbia died on January 31, 1962. He was 66. Dr. Hob-

son was born in Vancouver in 1896 and received his early education in that city. He studied at the North Pacific Dental College (University of Oregon) and graduated in 1917. Dr. Hobson served in the Canadian Dental Corps during world war II. He is survived by his wife and one daughter.

EDWARD GRAHAM MERNER — Dr. E. G. Merner of Windsor, Ontario, died on March 20, 1962. He was 59. Dr. Merner was born in Zurich, Ontario in 1903. After receiving his early education there and in Dashwood, Ontario, he attended the University of Toronto and graduated in dentistry in 1926. Surviving are his wife, Emily; two sons, Edward G. Merner and Eric N. S. Merner; and one daughter, Linda Lee Merner.

JAMES EDWIN PEACOCK—Dr. J. E. Peacock of Brantford, Ontario died on April 5, 1962. He was 39. Dr. Peacock was born in Timmins, Ontario in 1922. During the second world war he served with the Royal Canadian Air Force Bomber Command as a flying officer, both overseas and in Canada. In 1954 he graduated from McGill University, and set up practice in Brantford. Surviving are his wife, Aylene; a daughter, Aylene; a son, James; his father, William Peacock of Noranda; two sisters, Mrs. Kelly Gibb of Virginiatown, and Mrs. Noriene Bran of Toronto; and four brothers, Edward Peacock, Gordon Peacock, Wallace Peacock and Donald Peacock, all of Noranda.

ROBERT LYLE SCHARFF — Dr. Robert Lyle Scharff of Vancouver, British Columbia died on March 22, 1962. He was 63. Dr. Scharff was born in Hartney, Manitoba in 1899. He studied at the Royal College of Dental Surgeons of Ontario, graduating in 1924. He served in the first world war

in the Royal Flying Corps and in the second war in the Royal Canadian Dental Corps. Dr. Scharff is survived by his wife, Alice; two daughters and five grandchildren.

LOUIS WILLIAM STAPLES — Dr. Louis William Staples of Ingersoll, Ontario died on March 4, 1962. He was 66. Dr. Staples was born in St. Catharines, Ontario in 1896. He received his early education in Woodstock, Ontario and graduated from the Royal College of Dental Surgeons of Ontario in 1919. From that time he practised in Ingersoll. Surviving are his wife, Grace; a daughter, Mrs. Barbara Thomson of Ingersoll; sons, Dr. Louis Staples of Toronto, Dr. Thomas Staples of Hanover and Gerald Staples of Ingersoll; sisters, Miss Agnes Staples of Toronto, Mrs. Laura Kelly of Kingston and Mrs. Nora Clark of Toronto.

LUDGER-NOLIN TRUDEAU — Le Dr L.-O. Trudeau de Montréal est décédé le 25 février 1962. Il était né à Paris, France. Membre honoraire du Collège des chirurgiens dentistes de la province de Québec, il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1903.

WILLIAM CUTHBERT ARTHUR YOUNG — Dr. W. C. A. Young of Chapleau, Ontario died on March 30, 1962 at Sudbury. He was 51. Dr. Young was born in Chapleau in 1910. He graduated from the Faculty of Dentistry, University of Toronto in 1935. Dr. Young was the only dentist in a district extending from Sudbury to Marathon in Northern Ontario. He is survived by his wife, Helen Laureen; his mother, Mrs. George Young; and two brothers, Dr. G. E. Young and Eric, all of Chapleau.

C. D. A. Councils, Committees and Sections • Over two-hundred dentists participate voluntarily in the almost twenty councils and committees of the Canadian Dental Association. Others are active in the Association's four sections: Oral Surgery, Orthodontics, Periodontics and Dentistry for Children.

C.D.A. Brief to Royal Commission on Health Services • A limited number of copies of the brief submitted by the Canadian Dental Association to the Royal Commission on Health Services are available at Association headquarters. Copies may be secured on request to the Secretary, Canadian Dental Association, 234 St. George Street, Toronto 5, Ontario.

C.D.A. Library • The Library of the Canadian Dental Association contains a very large selection of dental and medical books, periodicals and other publications available for circulation to members of the Association anywhere in Canada. Donations to the Library Trust Fund qualify for income tax deduction.

Fluoridation • Dentists have an obligation to convince their patients that fluoridation can reduce dental caries safely and inexpensively by about two-thirds.

CANADIAN DENTAL ASSOCIATION RETIREMENT SAVINGS PLAN

Statement of Unit Valuation as of May 31st, 1962

GOVERNMENT BOND FUND

Investment at market value	\$238,544.32
Accrued income (interest)	1,086.55
Cash on deposit	50.71
TOTAL	\$239,681.58
Less: Administration fee of 1/8 of 1% of \$239,681.58	299.60
MARKET VALUE OF FUND	\$239,381.98
Units outstanding	20,617.695
UNIT VALUE OF FUND	\$ 11.610

CORPORATE BOND FUND

Investment at market value	\$420,664.70
Accrued income (interest)	2,044.48
Cash on deposit	113.33
TOTAL	\$422,822.51
Less: Administration fee of 1/8 of 1% of \$422,822.51	528.52
MARKET VALUE OF FUND	\$422,293.99
Units outstanding	34,611.433
UNIT VALUE OF FUND	\$ 12.200

COMMON STOCK FUND

Investment at market value	\$892,602.60
Accrued income (interest)	—
Cash on deposit	199.94
TOTAL	\$892,202.54
Less: Administration fee of 1/8 of 1% of \$892,802.54	1,116.00
MARKET VALUE OF FUND	\$891,686.54
Units outstanding	65,001.701
UNIT VALUE OF FUND	\$ 13.717

Trustee: The Royal Trust Company

Information about the C.D.A. Retirement Savings Plan is available from Mr. J. T. Staddon, 2249 Yonge Street, Toronto 7, Ontario. Telephone HU. 1-5731

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
July 7-14, 1962	XIII Intl. Dental Congress of the F.D.I.	Cologne, West Germany	Dr. R. Braun	Universitätsstrasse 73, Köln-Lindenthal, West Germany
July 15-20, 1962	British Dental Association	Nottingham, England	Dr. J. N. Peacock	13 Hill Street, London W.1., England
July 16-18, 1962	Symposium on Psychodontics	Villa Olmo, Como, Italy	Dr. B. Acht	Piazzetta Umberto Giordano 2, Milan, Italy
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Bldg., Prince Albert, Sask.
Sept. 7-9, 1962	Northern Ontario Dental Association	Empire Hotel, Timmins	Dr. J. Shaw	137b 3rd Avenue Timmins, Ontario
Sept. 19-22, 1962	IIIrd Congress of the Yugoslav Dental Association	Ljubljana, Yugoslavia	Dr. V. Krusic	2 Zaloska, Ljubljana, Yugoslavia
Sept. 23-25, 1962	Eastern Ontario Dental Association	Chateau Laurier Hotel, Ottawa	Dr. J. Berman	226 O'Connor Street, Ottawa, Ontario
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Québec
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior Street, Chicago, Ill.
19-25 novem- bre, 1962	XXXVies Journées den- taires internationales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre-Haret, Paris 9e, France
Nov. 22, 1962	Academy of Dentistry Toronto Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario

POSTGRADUATE AND REFRESHER COURSES (CANADA)

ALBERTA—A postgraduate course in ORAL DIAGNOSIS, PATHOLOGY and SURGERY will be offered at the Faculty of Dentistry, University of Alberta, November 5-7, 1962. This course will acquaint the private practitioner with recent advances in the diagnosis, pathology and treatment of common oral lesions. The course will consist of lectures, laboratory sessions, discussion periods and clinical surgery. The subject matter will cover anatomy and examination of the mouth, cysts of the oral region; pulp and periapical lesions, treatment of infections of dental origin, pre- and post-operative surgical care, caries and resorption of teeth and tumours of the oral cavity. Microscopes and library facilities will be provided. The course will be directed by Drs. D. G. MacGregor, G. H. Sperber and R. S. Van Alstine. Tuition fee \$75.

Enquiries and applications should be directed to the Secretary, Faculty of Dentistry, University of Alberta, Edmonton, Alberta.

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institution.

L'Association Dentaire Canadienne.

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Numéro 7

juillet 1962

JOURNAL

Expérience sur la décalcification des dents à l'aide d'une solution tampon d'acétate de sodium

par ROLAND LEMIEUX,* D.D.S., Montréal, P. Qué.

Les lésions de l'émail produites in vitro sous différentes conditions ont été très souvent comparées avec les caries initiales de l'émail au moyen du microscope polarisant et de la microradiographie. Besic, Coolidge et Jacobs¹ ont obtenu des lésions semblables à la carie avec une surface continue et lisse (lésion interne), en exposant l'émail intact à des solutions tampons d'un pH variant de 4.0 à 5.5,

contenant une forte concentration de calcium et de phosphate.

Hals, Mörch et Sand², qui ont employé une solution de lactate 0.5M, ont obtenu des lésions internes et des lésions externes de l'émail avec des pH de 4.1 et de 5.3 à 5.7.

Darling³ a produit des lésions internes par l'incubation de l'émail intact avec des organismes acidogènes dans un bouillon de lactose ou par l'exposition de l'émail à l'acide lactique 0.075%. Lemieux⁴ a repris les travaux de Hals, Mörch et Sand. Il a employé une solution tampon

*Département de pathologie buccale, Faculté de chirurgie dentaire, Université de Montréal.

Ce travail a été subventionné par une partie de l'octroi DA-79 du Conseil National des Recherches.

de lactate de sodium 0.5M à des pH de 4.93 et 5.12 qui lui ont donné des lésions internes et des lésions externes.

Dans ce travail, nous avons repris l'idée de Soni et Brudevold⁵ qui ont employé une solution tampon d'acétate de sodium à des pH de 4.0, 4.5 et 5.0 et à des concentrations molaires de 0.1, 0.01, 0.001. Ils ont obtenu des lésions internes semblables à la carie initiale avec les solutions tampons les plus faibles avec les pH 4.0, 4.5 et 5.0 et des lésions externes (cavités) avec les solutions les plus fortes et le pH 4.0.

MATÉRIEL ET MÉTHODES

Des dents provenant de sujets de tout âge ont été choisies. Ces dents étaient conservées dans la formaline 8%. Elles étaient nettoyées des dépôts de tartre et des plaques, en prenant soin de ne pas briser le cuticule de l'émail; puis, ensuite, elles étaient lavées pendant 24 heures à l'eau courante.

Selon la technique de Brudevold,⁵ les dents sont couvertes de paraffine excepté une portion de la face buccale, distale ou mésiale de l'émail pour permettre le contact de la solution-tampon d'acétate en un endroit limité.

La solution-tampon d'acétate de sodium est préparée en mélangeant une quantité déterminée d'acide acétique 0.1M et d'une solution d'acétate de sodium 0.1M préparée avec l'acétate de sodium cristallisé $\text{CH}_3\text{COONa} \cdot 3\text{H}_2\text{O}$.

La solution tampon acétate de sodium employée avait une concentration de 0.1 et un pH 4.5 qui était vérifié avec le pHmètre.

Les dents ainsi préparées sont placées dans la solution à la température de la pièce pour des périodes variant de 24 heures à 6 jours. Nous avons ainsi obtenu un nombre important de lésions artificielles de l'émail.

Nous avons fait des coupes usées et polies dans le sens longitudinal des bâtonnets pour l'étude au microscope en lumière traversante et en lumière polarisée. Les coupes étaient imbibées de

baume du Canada, d'eau distillée et de solution de Thoulet.

Cette solution de Thoulet décrite par Darling³ est une solution d'iodure de mercure et d'iodure de potassium dont l'indice de réfraction 1.62 est sensiblement égal à celui de l'émail dentaire.

Nous avons aussi préparé des surfaces usées et polies perpendiculaires aux bâtonnets d'émail pour étude en lumière réfléchie.

RÉSULTATS

Une différence très marquée dans la résistance de l'émail à la solution tampon d'acétate est très évidente. Certaines dents montraient une lésion blanche avec perte de substance après un contact de seulement 18 à 24 heures, tandis que d'autres dents restaient tout à fait intactes après cette période d'exposition; une lésion blanche sans perte de substance n'était visible que 48 heures après l'immersion de la dent dans la solution.

L'examen microscopique des coupes usées et polies montre deux types de lésions: les lésions internes et les lésions externes.

Les lésions externes de l'émail montrent une perte de substance, une mince zone de décalcification et une zone de transition. Les coupes imbibées d'eau distillée, placées entre les nicols croisés avec les bâtonnets à un angle de 45° entre les plans de la lumière polarisée, montrent une lésion interne (Figure 1); une zone de déminéralisation entourée d'une zone de transition et d'une couche minéralisée apparemment intacte qui recouvre cette zone.

La figure 2a montre une autre coupe usée et polie montée dans le baume du Canada vue en lumière polarisée avec filtre gypse rouge. Cette coupe nous fait voir une zone déminéralisée où les stries de Retzius sont plus apparentes; cette zone est recouverte d'une couche minéralisée. La couche la plus profonde de la lésion montre une zone où les stries de Retzius sont rendues plus visibles par la décalcification progressive.

FIGURE 1 Couche superficielle minéralisée couvrant une zone de déminéralisation. Coupe montée dans l'eau distillée vue en lumière polarisée (filtre gypse rouge, Obj. 10).

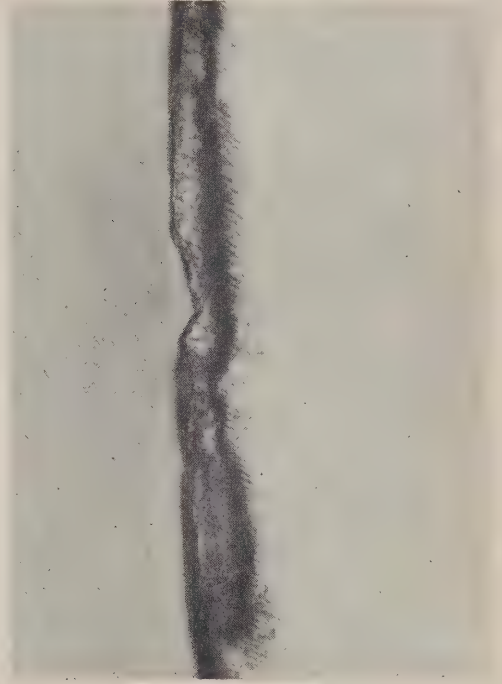


FIGURE 2 (a) Coupe montée dans le baume du Canada vue en lumière polarisée (filtre gypse rouge, Obj. 10). (b) Même coupe que 2a (Obj. 25).

2a



2b





FIGURE 3 Déminéralisation progressive. Coupe montée dans l'eau distillée vue en lumière polarisée (filtre rouge, Obj. 2.5).

FIGURE 4 (a) Déminéralisation initiale. Coupe montée dans l'eau distillée vue en lumière polarisée (Obj. 10). (b) Coupe de la même lésion que 4a, montée dans la solution de Thoulet.

4a



4b



La figure 2b montre la même coupe à un plus fort grossissement. La couche superficielle paraît moins bien conservée, parce que les stries de Retzius sont plus apparentes. Ici, nous voyons les bâtonnets d'émail qui sont déjà attaqués par le processus de décalcification qui procède de la membrane du bâtonnet vers le bâtonnet et vers la substance interpris-matique.

La figure 3 montre une lésion de l'émail dont la déminéralisation est progressive. La surface est intacte, continue, mais sans couche superficielle minéralisée.

En lumière polarisée, une coupe usée et polie montée sur plaque de verre dans l'eau distillée et lorsque les bâtonnets sont orientés dans le sens de la diagonale des quadrants positifs une lésion de l'émail donne l'image suivante; l'émail sain est verdâtre; il a une biréfringence négative. La zone décalcifiée donne une couleur jaune ou biréfringence positive. La zone de transition donne une couleur rouge,

elle est isotrope. Ces couleurs varient si l'épaisseur de la coupe augmente ou si les bâtonnets ne sont pas dans le sens de la diagonale des quadrants positifs.

Les coupes usées et polies imbibées de solution de Thoulet donnent une image différente de la même lésion imbibée d'eau distillée.

La figure 4a montre une lésion montée dans l'eau distillée. La zone déminéralisée est très bien visible sous la couche superficielle plus minéralisée. La figure 4b montre la même lésion imbibée de solution de Thoulet qui a le même indice de réfraction que l'émail. La zone déminéralisée est imbibée de solution et donne le même effet optique que l'émail sain. Cependant, nous constatons la persistance de quelques zones isotropes sur ces coupes. La solution de Thoulet remplit les espaces sous-microscopiques résultant de la déminéralisation et fait disparaître l'effet optique de la déminéralisation.⁶ L'isotropie qui reste montre une altération



FIGURE 5 (a) Coupe d'une carie initiale de l'émail montée dans l'eau distillée, vue en lumière polarisée (filtre rouge, Obj. 25). (b) Coupe adjacente à celle de 5a montée dans la solution de Thoulet (iodure de K et iodure de Hg).

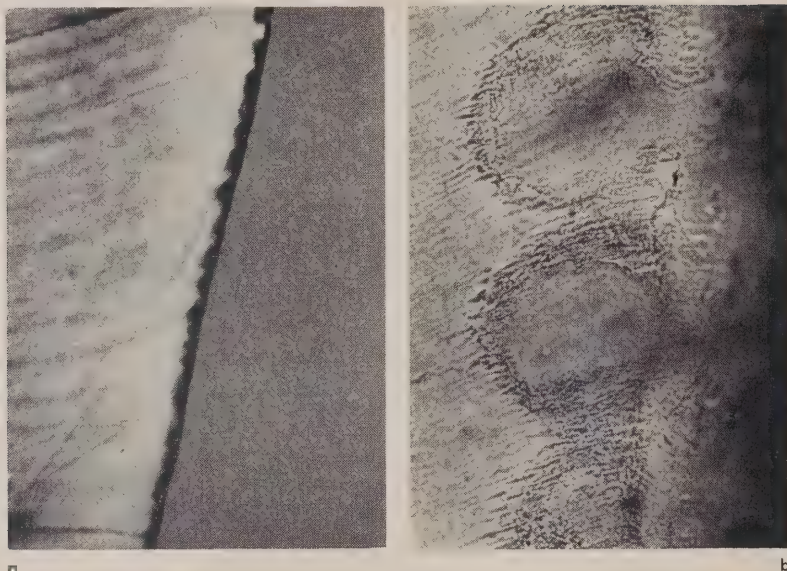


FIGURE 6 (a) Plusieurs petits foyers de déminéralisation. Coupe montée dans l'eau distillée, vue en lumière polarisée (Obj. 2.5). (b) Foyers de déminéralisation. Coupe montée dans la solution d'iode de K et d'iode de Hg, vue en lumière polarisée (filtre rouge, Obj. 25).

de la trame organique de l'émail. Le même phénomène est constaté sur des coupes de caries initiales de l'émail imbibées de cette solution (Figure 5a et figure 5b), mais les zones isotropiques dans la solution de Thoulet sont relativement petites. Sur plusieurs coupes dont les lésions étaient très peu profondes, nous remarquons plusieurs foyers de déminéralisation en surface de l'émail (Figure 6a). La zone de transition de toutes les lésions produites par l'action de l'acétate suit une ligne ondulée dont les parties les plus profondes correspondent aux stries de Retzius. Observés dans la solution de Thoulet, ces foyers montrent des altérations marquées de la trame organique (Figure 6b).

La déminéralisation de l'émail dans le processus de la carie se manifeste d'abord dans la gaine des bâtonnets, ensuite dans les bâtonnets, puis les bâtonnets et la substance interprismatique sont déminé-

ralisés et, par après, la masse organique est altérée et devient homogène. Cette évolution est très bien visible sur les coupes transverses des bâtonnets observés en lumière réfléchie sur les surfaces usées et polies.⁷

Dans les lésions de l'émail produites in vitro, il y a une certaine similitude, mais l'action étant beaucoup plus rapide, les zones sont à peine ébauchées et souvent absentes. Les transitions entre les zones sont très rapides.

Les zones décrites par Lemieux,⁴ dans les lésions produites par le lactate⁴ où l'action se développait à partir de la gaine autant vers la substance interprismatique que vers le centre des bâtonnets, sont très peu fréquentes et très peu étendues dans les lésions produites par l'acétate.

Une étude de la perméabilité au bleu de toluidine 1% montre que les lésions produites dans l'acétate de sodium sont toutes perméables.

DISCUSSION

Après ces quelques observations, quelques comparaisons peuvent être faites entre les caries initiales de l'émail et les lésions produites *in vitro* avec une solution d'acétate de sodium.

La déminéralisation est superficielle dans les lésions artificielles; elle est rapide et simultanée sur toutes les parties de la surface en contact, tandis que la carie progresse lentement et progressivement. Ceci explique l'aspect différent des deux lésions.

Les lésions produites *in vitro* sont très fragiles, tandis que les caries initiales de l'émail sont plus résistantes. Ceci peut être la conséquence du fait que la dent, dans le milieu buccal, baigne dans la salive qui apporte une certaine reminéralisation.

Nous avons constaté de nombreux foyers de déminéralisation dans les lésions peu profondes. Les lésions plus profondes pénétraient plus avant vis-à-vis les stries de Retzius. L'action de la solution acétate se fait sentir d'abord aux stries de Retzius pour ensuite s'étendre rapidement à cause de son action rapide et détruire très vite même la substance organique.

Ce fait, nous avons pu le constater grâce à l'imbibition des coupes par la solution de Thoulet. Cette solution a le même effet optique que des minéraux dans l'émail dentaire; elle imbibe la coupe et fait disparaître la lésion. Seulement quelques petites zones isotropiques demeurent. Ce qui nous fait penser que la substance organique est détruite très tôt dans la solution acétate.

CONCLUSIONS

La solution tampon d'acétate de sodium a une action rapide et radicale sur la substance inorganique et organique de l'émail dentaire.

Les lésions *in vitro* ont plusieurs points de commun avec les lésions initiales de la carie de l'émail.

Les stries de Retzius sont les premières attaquées par l'action de la solution acétate.

La substance organique de l'émail dentaire est très tôt attaquée par la solution acétate.

RÉSUMÉ

Des lésions de l'émail sont produites par l'acétate de sodium. Les lésions ressemblent à la carie initiale. Les stries de Retzius sont les premières attaquées par la solution. La substance organique est attaquée très tôt par la solution-tampon acétate.

SUMMARY

This article reports a study of enamel lesions produced in a buffered solution of sodium acetate. The lesions obtained "in vitro" appear to be similar to those produced by enamel caries. It was observed that the Striae of Retzius are the first component to be demineralized in this process. It was further noted that the organic constituent is attacked at an early stage by the buffered acetate solution.

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L'on ne peut, sans risque, prescrire des comprimés de fluorure dans toutes les municipalités de la province

par PAUL SIMARD, D.D.S., D.H.D.P., Lévis, P.Qué.

Il est urgent d'attirer l'attention des membres de la profession sur un problème qui, anodin de prime abord, est tout de même susceptible de causer quelque préjudice, au point de vue dentaire, à certains éléments de la population et entraîner pour autant du discrédit sur la profession.

Dans le but louable et légitimé d'apporter une réduction à la carie dentaire, bon nombre de dentistes prescrivent des comprimés de fluorure . . . Or l'on ignore la teneur en fluorure* de l'eau de consommation de la plupart des localités. Il y a bien quelques exceptions, comme dans le cas de la ville de Québec (indice de .1 à .2)¹, de la ville de Montréal² et des autres localités qui, comme cette dernière, prennent leur approvisionnement d'eau du fleuve St-Laurent (indice .1 p.p.m.); mais pour les autres??? Comment alors exiger des dentistes, d'une part, de prescrire avec circonspection des comprimés de fluorure alors que, d'autre part, ils ne disposent pas de cette donnée de base qui est la teneur en ion-fluorure de l'eau de la municipalité où ils pratiquent?

Il est fort possible que soit négligeable la concentration en fluorure de l'eau des 757 réseaux d'aqueduc (qui desservent 64.4% de la population).³ Mais il subsiste tout de même un doute sérieux. En effet, 7 millions de personnes, aux Etats-Unis, font usage d'eau fluorée sans l'intervention humaine, à un taux à peu près optimum.³ Comme l'approvisionnement de 99 systèmes d'aqueduc⁴ provient d'eaux souterraines, plus susceptibles d'être

fluorées que les eaux de surface, toute hypothèse est justifiable.

Ainsi, que l'on prescrive des pilules de fluorure dans des localités où l'eau renfermerait 1 ppm d'ion-fluor ou plus, et il y aura danger de fluorose dentaire. Maier rapporte, en effet, des cas de fluorose légère à des concentrations de 1.5 p.p.m.⁵, alors qu'à 2 p.p.m. survient la madrure de l'émail.⁶

Un autre point . . . Officiellement, 13 municipalités de la province utilisent la fluoration.⁷ Ce nombre reste en deçà de la réalité. En effet, le gérant d'une compagnie qui vend des appareils à fluorer l'eau écrivait au soussigné, en date du 14 décembre 1961: ". . . nous avons déjà approximativement 17 à 18 fluorateurs en opération (dans la province)". Or il se peut fort bien que d'autres compagnies aient installé, elles aussi, des appareils à fluorer l'eau. C'est donc dire que des dentistes peuvent résider dans des localités où l'on fluore l'eau sans qu'ils le sachent. Tiennent encore, dans ces cas-là, les désavantages possibles de la prescription de comprimés de fluorure.

A la lumière de ces faits les recommandations suivantes semblent s'imposer:

1. *Que demande soit faite au Ministère provincial de la santé d'analyser l'eau, au point de vue contenu en fluorure, des 757 systèmes d'approvisionnement d'eau.*

Comme l'analyse de l'eau (qui ne comprend pas toutefois l'analyse qualitative et quantitative des fluorures) est chose courante au Laboratoire du Ministère de la Santé, à Montréal, cette requête n'a rien d'extravagant.

*p.p.m.: partie (d'ion-fluor) par million de partie d'eau.

2. Que le Ministère de la santé tienne le Collège des chirurgiens-dentistes de la province de Québec au courant du nom des municipalités où la fluoration est en vigueur.

Le Collège serait ainsi en mesure d'aviser les dentistes pratiquant à ces endroits.

Si cette politique était suivie:

(a) l'on posséderait des données essentielles sur la teneur en fluorure des différents systèmes d'approvisionnement d'eau;

(b) les dentistes seraient plus enclins à prescrire des comprimés de fluorure à leurs patients qui demeurent dans les localités où l'eau n'est pas fluorée;

(c) la population ne serait pas exposée à la fluorose dentaire et le prestige de la profession ne serait pas menacé;

(d) s'il se trouve des municipalités où l'eau est suffisamment fluorée, sans l'intervention humaine, elles fourniraient une source précieuse de données à l'occasion d'éventuelles enquêtes épidémiologiques.

SUMMARY

The author draws attention to the danger of prescribing fluoride tablets when the fluoride content of the domestic water supply (from natural sources or home fluoridation units) is unknown to the dentist.

He strongly urges that the Quebec provincial health department (1) analyse the fluoride content of the province's 757 communal water supply systems and (2) keep the College of Dental Surgeons of the Province of Quebec fully informed with respect to all municipalities fluoridating their water supplies.

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8 Bellevue

Assurance-santé dentaire et âge moyen des dentistes du Québec

par GUY BOISCLAIR, D.D.S., D.H.D.P., Trois-Rivières, P. Qué.

Les gouvernements, depuis quelques années, sont sensiblement éveillés à l'idée de faire profiter nos populations des

avantages d'un plan d'assurance-santé. Les députés sont alertés et les organismes intéressés abondent dans le même sens.

Cependant, les réalisations concrètes en certains pays forcent les autorités à une certaine prudence et elles ont raison:

Conférence prononcée au Congrès de l'Association dentaire de la province de Québec, le 23 mai 1962, à Chicoutimi.

plusieurs points demandent une très grande considération avant la mise en acte d'une telle mesure de santé.

Il est certain que la population serait très heureuse de voir les gouvernements mettre en force tout ce que comporte théoriquement une telle mesure sociale. Les autorités ne sont pas sans se rendre compte du malaise qui existe au sujet des honoraires des diverses professions.

On ne peut le nier: la naissance, la maladie, les traitements dentaires et les ordonnances affectent lourdement un trop grand nombre de budgets familiaux.

Il est malheureusement trop vrai de constater que l'écart entre les frais médicaux et les revenus de plusieurs patients sont incompatibles. Il est donc normal que les chefs de famille et certains organismes publics, tels les syndicats, face à cette situation pénible, songent à des solutions pratiques qui se résument à des formules d'assurance-santé.

L'assurance-santé, dans son sens le plus large, pourrait comprendre l'intégration de plusieurs professions, dont la médecine, l'optométrie, la pharmacie, la chirurgie dentaire, etc.

En toute franchise et en toute objectivité, le peuple peut-il s'attendre à profiter d'un seul coup de tous les avantages attachés à une telle mesure de santé?

La rumeur publique semble croire que les gouvernements ont comme premier souci de demeurer au pouvoir; mais les autorités gouvernementales pensent aussi à la santé publique et mentale de la population. Celles-ci ne légifèrent pas en vue d'un échec, ni dans le but de nuire à la santé de la population.

Les opinions peuvent être différentes dans l'esprit de certains individus mal intentionnés ou mal renseignés.

Les gouvernements, en songeant à l'intégration de la chirurgie dentaire dans un plan général de santé et conseillés par les organismes intéressés et par ceux qui surveillent les intérêts des diverses professions, tendent vers des mesures de moyen terme et des méthodes de préven-

tion; ils se proposent néanmoins l'établissement éventuel d'un plan d'assurance-santé dentaire.

Une assurance-santé dentaire, si on tient compte des diverses opinions, serait une chose merveilleuse pour la population du Québec. Oui, on aimerait aller chez le dentiste! On aimerait pouvoir conserver les dents des enfants! Le travail entrepris par la Ligue d'hygiène dentaire de la province de Québec n'est pas étranger à cette soudaine évolution. La population est beaucoup plus éveillée à l'idée de conserver ses dents et particulièrement celles de ses enfants. Par contre, les dentistes peuvent-ils présentement réduire leurs honoraires? Non, car ils devraient, au contraire, les augmenter, s'ils tiennent compte de la progression du coût de la vie et s'ils comparent leurs propres honoraires avec ceux des autres provinces canadiennes.

Il ne faut pas se fier aux apparences, elles sont souvent trompeuses. Il ne faut pas se faire d'illusion: un plan quelconque d'assurance-santé ne fournirait pas de dentiers complets, de dentiers partiels, de ponts fixes, de couronnes en porcelaine ou en acrylique.

Voyons ce qui se passe dans d'autres pays où existe un système d'assurance-santé: les résultats qualitatifs laissent à désirer.

Il est beaucoup plus sage de croire qu'un plan d'assurance-santé devrait commencer en offrant des traitements préventifs aux futures générations.

Les recommandations du mémoire de l'Association dentaire canadienne soumis à la Commission d'enquête sur les services de santé insistaient sur les soins dentaires à l'intention des enfants de groupes d'âge allant de trois à six ans.

Que faut-il penser de ces recommandations? Devons-nous les appuyer? Très certainement. Car divers facteurs, même si les soins ne sont prodigués qu'au groupe des enfants, s'opposent à l'établissement d'une telle mesure sociale. Ces facteurs sont la mentalité du dentiste, la nature du patient, le nombre des dentistes en exercice et leur âge moyen.

Le dentiste, pour répondre aux besoins, doit pouvoir disposer d'une certaine quantité d'heures de travail. Le dentiste est un homme comme les autres; il ne peut pas travailler de neuf heures du matin jusqu'à neuf ou onze heures de la soirée, et cela, pendant cinq ou six jours par semaine; il se ruinerait très vite.

Le dentiste n'est pas exempt de la maladie; il a des obligations familiales; il a droit à des jours de congé pour se reposer ou se divertir; il se doit de participer à des journées d'étude, aux assemblées de sa société dentaire pour suivre les derniers progrès de sa discipline et pour son enrichissement personnel. Son rang dans la société l'oblige à participer à la vie de son entourage. Certaines opérations plus délicates, comme une fracture de mâchoire, une gingivectomie, une alvéolectomie, un traitement de canal, etc, nécessitent plus de temps de la part de l'opérateur. Ces occupations font partie de la vie normale de l'être humain qu'est le dentiste; elles accaparent du temps pendant lequel le dentiste ne peut pas produire et elles diminuent le nombre de patients qui ne pourraient recevoir les traitements auxquels ils auraient droit en vertu d'un plan d'assurance-santé.

Avons-nous assez de dentistes? Je ne le crois pas.

Pour pouvoir traiter adéquatement les patients et pour répondre aux besoins, il faut des dentistes. Un nombre minimum est absolument nécessaire et, de plus, il faut des dentistes qui consentent à traiter les enfants, tout en continuant de voir les autres groupes d'âge.

Présentement, nous n'avons que 1,402 dentistes enregistrés au Collège. Notre population compte plus de 5,000,000 d'habitants; les enfants de zéro à douze ans se chiffrent, en 1962, à près de 1,847,160. Ces statistiques doivent nous inciter certes à une prudence justifiée.

Le dentiste, pour traiter des enfants, doit avoir une bonne santé et, quand je dis bonne santé, je veux dire, bonne vue, bonnes jambes, bons réflexes, grande patience et une certaine dose d'hypnose pour gagner la confiance de l'enfant. Or,

je doute fort que tous nos dentistes soient des surhommes capables de traiter des enfants durant plusieurs heures, par semaine.

L'âge du dentiste est un facteur important; il ne faut pas, de plus, oublier son tempérament. Il faut savoir que certains dentistes, je dirais même plusieurs, ne peuvent pas traiter les enfants; d'autres ne le veulent pas.

Un individu de quarante ans réagit selon son âge avec toutes les conséquences physiques et intellectuelles qui s'y rattachent.

Nous voulons une assurance-santé dentaire? Je viens de vous citer nos effectifs et la population du Québec. Je vous ai exposé brièvement les possibilités d'un dentiste face aux heures de travail, au nombre de patients et aux traitements à prodiguer. La réussite d'un plan d'assurance-santé dentaire est fort compromise en regard de ces constatations. La situation s'aggrave, si nous considérons l'âge moyen de nos dentistes, qui est de quarante-quatre ans et sept dixièmes (44.7). Ce n'est peut-être pas si mal, me direz-vous?

Mais considérez un peu les chiffres suivants: les 1,402 dentistes de la province de Québec, quant à leur âge, se répartissent comme suit:

113	de 25 à 29 ans
413	de 30 à 39 ans
356	de 40 à 49 ans
211	de 50 à 59 ans
309	de 60 à 96 ans

Nous sommes obligés, en étudiant cette courbe, de la trouver très déficiente et inapte à suffire à la demande par rapport au nombre d'enfants et au temps en heures exigé pour les traitements.

Pouvons-nous prôner une assurance-santé dentaire au Québec? Plus tard, mais non présentement.

Que conclure et quels moyens faut-il prendre pour pallier temporairement à la situation actuelle?

La population pourra bénéficier d'une tranche d'un plan d'assurance-santé dentaire seulement quand le nombre des dentistes aura augmenté et que l'incidence de

la carie dentaire se sera amélioré grâce à un vaste programme d'éducation populaire.

CONCLUSIONS PRATIQUES

Quatre grands moyens que tous connaissent et que tous peuvent utiliser peuvent contribuer à baisser l'incidence de la carie dentaire.

La première de ces méthodes est à la base de toute prévention: c'est une alimentation rationnelle et adéquate proportionnelle à chaque individu. Une sous-alimentation ou une mauvaise nutrition conduit inévitablement l'enfant et l'adolescent vers une mauvaise santé dentaire et une mauvaise santé générale.

L'hygiène buccale personnelle et familiale joue aussi un rôle important dans la prévention de la carie dentaire; l'absence d'hygiène est source de graves conséquences.

Une hygiène buccale profitable exige que l'être humain s'ouvre la bouche pour bien brosser ses dents. Malheureusement, trop souvent, on ne brosse que les dents qui paraissent en ouvrant la bouche et on oublie les dents postérieures; elles sont pourtant celles qui se carient le plus vite.

Que penser des visites au cabinet du dentiste? Deux visites, par année, s'imposent pour conserver les dents en bonne santé. Visiter le dentiste à tous les cinq ou dix ans est une catastrophe, catastrophe au point de vue santé dentaire et au point de vue financier.

Il faut aussi, pour compléter le tableau, mentionner la fluoruration. Les expériences de Sarnia, Stratford et de Brantford ont prouvé que le taux de carie dentaire diminue tellement que les municipalités auraient tout avantage à prôner cette mesure de santé.

Il faudrait plaindre un individu qui visiterait le dentiste trois ou quatre fois par année, mais qui, par contre, s'alimenterait mal ou n'entreprendrait pas ses dents et les tissus environnants; son pourcentage de carie ne pourrait certes pas diminuer. Non, la carie dentaire continuerait son petit bonhomme de chemin et la santé générale et dentaire en seraient sensiblement affectées.

*"Les dents ajoutent des années à la vie,
les dents ajoutent de la vie aux années."*

SUMMARY

The author expresses disapproval of the immediate introduction of a dental health insurance plan in the province of Quebec, even if limited to dental care for children. He bases his view on the inadequate number of dentists (1,402 dentists serving a population in excess of five million people and including about 1,847,160 children 0-12 years of age) to cope with the demands engendered by such a plan, and on the high average age (44.7 years) of practising dentists in the province.

The author believes that the number of dentists must be increased and an extensive program of health education instituted before any dental health insurance plan can be introduced. Such a program of health education must be based on the application of four well-known measures: proper nutrition, good health habits, periodic visits to the dentist, and fluoridation.

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Conseil des Gouverneurs • Le Conseil des Gouverneurs de l'Association dentaire canadienne se compose de membres choisis par les organismes dentaires des dix provinces du Canada. Le conseil s'assemble, chaque année, durant les quelques jours qui précèdent le congrès. Tous les membres de l'Association dentaire canadienne peuvent participer aux assemblées annuelles du conseil.

RESUME

UNE SEPTICEMIE VEINEUSE SUBAIGUE GUERIE PAR L'ABLATION D'UN FOYER INFECTIEUX DENTAIRE

Editorial. Médecine et Hygiène,
15 novembre 1961.

Dans *l'Information dentaire* (47:1335, 26 novembre 1961) H. Bour, M. Roman et G. Schaison, rapportent le cas d'un homme de 37 ans, qui, à la suite d'un petit traumatisme de la cuisse gauche, présente une ecchymose qui, au lieu de régresser, semble s'étendre chaque jour davantage.

Sur la saphène interne apparaît une plaque érythémateuse qui s'allonge dans le sens de la veine.

Malgré le repos et les traitements appropriés la phlébite s'étend vers le bas et le malade reste subfébrile.

En l'espace d'un an, le malade voit se développer plus de 20 localisations veineuses avec une polarité plus spéciale pour la saphène interne gauche.

L'étiologie ne donne rien de spécial et la négativité des examens amène les auteurs à rechercher un foyer infectieux local, point de départ des focalisations.

Or, l'examen stomatologique seul apporta un résultat positif. Il découvrit de très nombreux foyers dentaires de type kystique. Ces foyers étaient particulièrement bien visibles sur les radios des dents. Ils siégeaient tous au maxillaire supérieur.

L'extraction de 12 dents fut proposée et pratiquée sous anesthésie générale, ceci d'autant plus que les dents adhéraient à leurs alvéoles, de telle façon qu'il fut nécessaire de pratiquer des alvéotomies.

L'intervention fut suivie le lendemain d'une extension importante de la poussée

thrombosante en cours et d'un clocher thermique à 39 degrés malgré les antibiotiques.

Mais, une semaine plus tard, tout était rentré dans l'ordre. Fièvre, inflammation veineuse avaient disparu et le malade put quitter l'hôpital en parfait état.

Six mois après l'intervention, le malade a été revu, il a repris ses activités et le bilan biologique ne montre aucune anomalie. En résumé, il s'agit d'une observation de thrombophlébite superficielle récidivante évoluant depuis plus d'un an et guérie par l'ablation de foyers infectieux dentaires multiples.

Les auteurs donnent des généralités sur la maladie thrombosante rappelant que cette atteinte veineuse n'est pas toujours localisée au système cave, mais peut se manifester aux veines sus-hépatiques ou mésentériques. Elle se rencontre surtout chez l'homme à l'âge moyen de sa vie, bien qu'il y ait des exceptions. Quant à l'étiologie, si l'on retient le traumatisme comme dans le cas cité, on songe aussi à la goutte, aux hémopathies, aux cancers viscéraux et à la hernie diaphragmatique.

A côté de ces étiologies majeures, il faut reconnaître que l'étiologie infectieuse tient relativement peu de place.

Cependant, dans la littérature, un certain nombre de cas de foyers infectieux sont cités qui, après leur ablation, ont assuré la guérison du malade.

On peut même se demander dans quelle mesure cette origine de la septicémie veineuse n'est pas plus fréquente à partir de foyers infectieux, même lorsque le foyer n'est pas absolument évident.

Dès lors, on conçoit l'importance du spécialiste dans ces cas et spécialement

du stomatologiste pour découvrir un foyer de prime abord inaperçu.

Par quel mécanisme alors, un foyer infectieux peut-il être rendu responsable d'une thrombophlébite récidivante?

L'embolie septique semble devoir être écartée. Faut-il alors, selon les auteurs, envisager un processus allergique? Faut-il voir une forme particulière de sensibilisation de la veine à l'infection? Faut-il envisager un état réceptif particulier de la veine à certaines toxines microbiennes?

L'action parfois nette bien que transitoire de la butazolidine plaiderait peut-être en faveur de facteurs inflammatoires prédominants, mais alors, toujours selon les auteurs, comment expliquer l'échec habituel des corticoïdes?

Cette observation est suivie d'un commentaire de Seimbille qui regrette d'abord que dans ce cas, l'examen bactériologique des granulomes n'ait pu être pratiqué, afin de déterminer l'agent infectieux en cause, bien que, jusqu'à ce jour, on n'ait pas trouvé d'agent infectieux expliquant la septicémie veineuse par une métastase.

Il semble malgré tout que le terrain soit dominant et que les diverses irritations de quelque nature qu'elles soient venant s'ajouter les unes aux autres favorisent l'évolution d'affections très diverses.

Ceci nous rappelle un cas de notre clientèle où le patient présentait des symptômes semblables. Il avait été vu par plusieurs dentistes avant nous qui n'avaient rien trouvé de suspect dans la bouche, malgré de nombreuses radios.

Notre examen vint confirmer les dires de nos confrères, cependant un petit granulome insignifiant retint notre attention.

Devant l'état très déficitaire du patient qui tenait le lit continuellement et voyait ses forces diminuer chaque jour, nous avons pratiqué, sans grande conviction, l'ablation de cet apex suspect sur la dent duquel une couronne avait été fixée.

A notre stupéfaction, le malade se remit très vite de son état et soutient maintenant que nous lui avons sauvé la vie, alors que nous n'avons été qu'un instrument parmi tant d'autres.

LES ACTUALITES DENTAIRES

L'Association

MEMOIRE DE L'A.D.C. A LA COMMISSION ROYALE

Les représentants de l'Association dentaire canadienne ont comparu, à Ottawa, devant la Commission royale d'enquête sur les services de santé, le 20 mars dernier.

L'Association, dans son mémoire, a demandé que la fluoration devienne obligatoire en vertu d'une législation provinciale; elle s'est opposée à l'établissement d'un programme d'assurance-santé dentaire qui couvrirait tous les citoyens du Canada; elle a mis l'accent sur l'importance de la recherche, de la prévention et du recrutement en personnel dentaire.

Le mémoire, tout en s'opposant, pour le moment, à un programme de traitements dentaires complets, a souligné les conditions

indispensables pour son application:

- Le plan de traitements dentaires devrait être précédé et accompagné de campagnes soutenues d'éducation en hygiène dentaire;
- Des enquêtes entreprises au préalable et répétées chaque année sur les besoins de la population, sur les effectifs de la profession et sur les fonds disponibles pourraient déterminer quels groupes d'âge devraient être couverts par le plan;
- Les dentistes devraient prodiguer les services dans leur cabinet particulier et les paiements de services se faire sur une base d'une somme pour chaque traitement selon une liste d'honoraires acceptable;
- Les dentistes, à leur choix, adhéreraient ou non au plan;
- Un patient aurait le droit de choisir son dentiste et, par ailleurs, le dentiste aurait le droit de choisir ses patients;
- Le plan serait administré par des corporations organisées par la profession dentaire.

Le mémoire a souligné la nécessité urgente de consacrer plus d'argent aux recherches dentaires, à l'éducation de la population en matière d'hygiène dentaire et aux disponibilités pour la formation de dentistes et d'auxiliaires. On a établi à \$20 millions la somme qu'il faudrait dépenser pour instituer de nouvelles facultés dentaires et de nouvelles écoles pour des hygiénistes. L'Association a suggéré au gouvernement de mettre, sur un base nationale, des prêts à la disposition des étudiants et, pour commencer un tel fonds, elle a offert d'y mettre \$50,000, à condition que le gouvernement fédéral fasse de même; elle a conseillé à la Commission, pour inciter un plus grand nombre d'étudiants à embrasser les professions s'occupant de santé, d'abaisser et d'éliminer graduellement les frais de scolarité aux universités.

L'Association a demandé que le gouvernement fédéral consacre \$50,000 à des recherches entreprises dans le but de déceler les meilleures méthodes pour intégrer le service auxiliaire dans l'équipe de santé dentaire; elle a aussi proposé d'organiser des cours pour les assistants et les techniciens; elle a fait des recommandations spécifiques au sujet des services dentaires dans les hôpitaux, la dissémination des services dentaires aux assistés d'Etat, l'aide pécuniaire aux villes qui institueraient la fluoration et plusieurs autres questions.

L'Association était représentée à Ottawa par son président, le docteur William Miller, son secrétaire, le docteur Don W. Gullett, les docteurs Rémy Langlois, William G. McIntosh, James D. McLean, Robert M. Grainger et Mlle Isabel Boyd.

On peut se procurer au secrétariat des copies du mémoire.

LE PRESIDENT DE L'A.D.C. PRECONISE LA FLUORATION

"L'opposition qu'on fait à la fluoration n'a aucune raison d'être." Telle est l'opinion que donnait le président de l'Association dentaire canadienne, le docteur William Miller, au cours des visites qu'il faisait récemment aux sociétés dentaires de l'ouest du pays.

Le docteur Miller a déclaré qu'il fallait répondre à trois questions fondamentales: Est-elle sans danger? Est-elle efficace? Est-elle économique? Des recherches prolongées ont donné des réponses affirmatives à ces trois questions.

Le Canada

UN ECONOMISTE ET UN SYNDICALISTE ONT PARTICIPE A UN COLLOQUE AU CONGRES DE L'A.D.C.

Mm. Malcolm Taylor, économiste bien connu, et Andy Andras, directeur de la législation du Congrès du travail canadien, ont pris part au programme du Congrès de Vancouver.

Le colloque auquel ils ont participé s'intitulait "Tendances socio-économiques des services de santé". M. Andras a traité du sujet suivant: "Les syndicats s'intéressent aux traitements de santé". Le président du colloque était le docteur William Miller, président de l'Association dentaire canadienne. Le Conseil des Gouverneurs, conscient de l'intérêt qu'avait suscité des communications sur des sujets profanes au cours de deux congrès précédents, avait prié le Conseil Exécutif d'organiser des colloques du genre à chacun des congrès de l'A.D.C.

Au Congrès d'Halifax, en 1959, un groupe de quatre panellistes avait tenté de prédire l'avenir de la profession dentaire au cours des dix prochaines années. A Ottawa, en 1960, un panel avait étudié la question des services auxiliaires.

LES TECHNICIENS TRANSIGERONT AVEC LE PUBLIC EN COLOMBIE BRITANNIQUE

Le bill qui autorise les techniciens à travailler directement pour le public a subi sa troisième lecture à la Législature de la Colombie britannique, à la fin de mars. Ce bill no 27 constitue une révision et une interprétation plus large de la loi précédente des techniciens dentaires et il fixe, d'une façon générale, les conditions d'éligibilité et d'enregistrement et les qualifications des personnes qui seront reconnues comme des techniciens de laboratoires dentaires et des autres qui seront reconnues comme mécaniciens dentaires.

Cette nouvelle loi, appelée "Loi pour amender la loi des techniciens dentaires", fut présentée à la suite d'un jugement qui déclarait que des clauses semblables édictées par le Bureau des techniciens dentaires étaient ultra vires. C'est le gouvernement provincial lui-même qui, malgré les objections du Collège des chirurgiens-dentistes de la Colombie britannique qui suggérait une autre législation, avait soumis ce projet de loi.

Cette loi permet à toute personne qui a besoin de prothèses complètes de se rendre chez un mécanicien dentaire pour les empreintes et l'ajustement des pièces. Au paravant, elle doit cependant obtenir d'un dentiste ou d'un médecin un certificat qui déclare que "la cavité buccale, les tissus et les organes adjacents sont dans un bon état et qu'ils peuvent tolérer des prothèses et qu'aucune dent n'a été extraite et qu'il n'y a pas eu de chirurgie de faite dans la bouche au cours des derniers vingt-et-un jours qui ont précédé l'examen".

Les mécaniciens et les techniciens des laboratoires dentaires seront régis par un Bureau des techniciens dentaires qui établira les règlements au sujet de l'enregistrement, de l'octroi des licences, des qualifications et des examens des deux groupes et de leurs apprentis. Le Bureau peut accorder une licence à une personne qui est enregistrée comme technicien dentaire pour "confectionner, réparer, rebaser, remplacer et fournir des prothèses complètes supérieures ou inférieures ou les deux et pour employer les procédures non-chirurgicales nécessaires dans la bouche, comprenant la prise des empreintes indispensables, sans prescription", s'il a reçu d'un médecin ou d'un dentiste dûment qualifié un certificat de santé buccale dans les sept jours qui suivent l'examen de la bouche par le dit médecin ou dentiste. La loi empêche qu'un technicien de laboratoire dentaire et qu'un mécanicien dentaire soient enregistrés à la fois dans les

deux catégories. La loi prévoit des sanctions sévères. Cependant la loi déclare "qu'une preuve suffisante doit être apportée pour déclarer qu'un individu a fraudé la loi ou les règlements".

MANITOBA

Le docteur Macdonald a pris la parole à la première collation des grades à des dentistes au Manitoba. — Les premiers diplômés de la faculté de chirurgie dentaire de l'Université de Manitoba ont reçu leur parchemin, le 24 mai dernier. A cette occasion, le docteur John B. Macdonald qui est dentiste et le nouveau président de l'Université de Colombie britannique a reçu un doctorat en lettres "honoris causa".

Quatorze garçons et une jeune fille finissaient leurs études dentaires. Ils sont les premiers à recevoir un doctorat en chirurgie dentaire de l'Université de Manitoba; cette faculté dentaire, en 1958, était la première à être fondée depuis quarante ans.

Ces diplômés sont aussi les premiers au Canada à recevoir le diplôme de D.M.D., doctorat en médecine dentaire.

ONTARIO

Un collège offre un cours aux assistantes dentaires. — Apparemment, pour la première fois au Canada, un collège secondaire, situé à Scarborough, en banlieue de Toronto, offrira, en septembre prochain, un cours régulier pour la formation d'assistantes dentaires. Ce cours ajoutera un entraînement pratique aux matières déjà enseignées dans les classes de 10e, 11e et 12e années. Les jeunes filles deviendront des assistantes dentaires qualifiées après avoir terminé leur douzième année. Elles pourront alors continuer leurs études ou chercher un emploi dans un cabinet dentaire.

Le gouvernement d'Ontario offre des bourses à des étudiants dentaires. — Le gouvernement d'Ontario donnera à 20 étudiants en médecine et à 10 étudiants en chirurgie dentaire des bourses de \$1,000, par année, s'ils consentent à exercer dans des endroits où il y a pénurie de médecins ou de dentistes. Le ministre de la santé, l'Hon. Matthew Dymond, a déclaré en Chambre que les étudiants en médecine auront des bourses pour quatre ans et ceux en chirurgie dentaire, pour trois ans. On ne connaît pas encore les détails du projet.

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A Study of Defects in Class II Dental Amalgam Restorations in Deciduous Molars

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Class II amalgam restorations in deciduous teeth have been the subject of considerable comment and research for many years. As early as 1932 McBride¹ stated that sharp cusps of opposing teeth were one of the chief causes of isthmus fractures and advised reducing such cusps. In 1944 Gabel² stated:

"Due to inherent characteristics of amalgam and certain peculiarities of deciduous molars, failures of the amalgam proximo-occlusal restoration are more frequent than any other type."

He attributed such failures primarily to the "strength of the structure" of the primary molar and noted that since the dentine walls at the level of the gingival floor are relatively thin, the gingival floor should not be extended too far buccally or lingually for fear of undermining the buccal and lingual enamel. Using engi-

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neering principles as a basis for his reasoning, he pointed out that increasing the depth of the cavity and rounding the axio-pulpal line angle would result in much greater strength to the restoration than increasing the width.

Later Ireland³ and Brown⁴ described how certain features such as a wide isthmus, and inverted proximal cavity designs could improve class II restorations in deciduous molars.

The first significant research on this subject was carried out by Lampshire⁵ who prepared brass models of a deciduous second molar and studied the effect of altered cavity design on isthmus fractures in class II restorations. He found that the three most significant factors in preventing isthmus fractures were:

1. An isthmus width of about one-quarter the bucco-lingual diameter of the tooth.
2. Rounding of the pulpal floor and the pulpal axial line angle.
3. Side retention grooves incorporated into the proximal portion of the cavity.

Haskins et al⁶ used resin plastic models of a deciduous second molar and studied stress patterns in restorations placed in class II cavities of various designs. They concluded that a cavity design incorporating a deep occlusal step and a rounded pulpal wall produced a better distribution of stress in the restoration. Rounding the pulpal axial line angle or the axial wall, or sloping of the axial wall did not consistently reduce stress in the restorations.

Mahler⁷ on the other hand used a somewhat similar photoelastic testing procedure as Haskins but included a study of stresses within the tooth itself which in his study was a mandibular deciduous first molar. His findings did not agree with those of Haskins since the least tensile stress was found in a cavity design which incorporated a flat pulpal wall and

a sloping axial wall. Mahler also concluded that both increased depth and increased width in the cavity design lowered the resistance of the tooth to structural breakdown.

It would be impossible to form any definite conclusions from these two studies because of the conflicting data. It appears that regardless of the type of cavity design the operative procedure inflicts insult to a tooth already partially destroyed by caries. The problem therefore is to find out by a clinical study what type of cavity design would result in the least number of defects.

Extensive clinical studies of class II restorations in deciduous teeth have not been reported. Healey and Phillips⁸ studied defects in 1,521 amalgam restorations in permanent teeth and found that 56 per cent of the defects were due to faulty cavity preparation while 40 per cent were felt to be due to faulty manipulation of the amalgam. Nadal, Phillips and Swartz⁹ recently reported on 257 class II restorations placed in permanent molars using a bulky cavity design and three different levels of mercury (49 per cent, 58 per cent and 62 per cent) and found that only one isthmus fracture occurred. In sixty-four restorations in which a shallow cavity design was used, seven isthmus fractures occurred. Margin breakdown occurred most frequently in the high mercury content alloys in large size cavities.

This report from the dental clinic of the University of Alberta deals with a four-year study of class II dental amalgam restorations placed in deciduous molars mostly by students but some by staff members as well.

The purpose of this study was:

1. To determine the incidence of various types of defects in class II restorations in primary molars.
2. To determine whether an alteration in the form of the class II cavity could influence the incidence of defects in the amalgam restoration.

METHOD

One year after commencement of the study a pilot survey was carried out on 313 class II restorations placed in deciduous molars and 64 class II restorations placed in permanent first molars. The cavity design suggested by Lampshire's⁵ study was used for the deciduous molars, with a modification in about half the cases where a flat rather than a rounded pulpal floor was used. The cavity design suggested by G. V. Black¹⁰ was used for the permanent molars.

The rubber dam was used for all of the restorations. The matrix most often used was the brass "tee" band supported with red compound, although occasionally a mechanical type matrix was used especially where there was a disto-occluded cavity in a deciduous first molar with no approximating second molar. Condensing was done with small round condensers, most often American Dental No. 1A and No. 6A. The alloy most often used was regular cut (either powder or pellets), because of the desirability of slower setting time for students. In some of the cases treated by staff members fine cut alloy was used but no noticeable improvement in margin defects resulted. Both a radiographic and clinical survey were carried out. The study considered five types of defects as follows:

Overhang.—This refers to the defect in which amalgam projects beyond the gingival margin either proximally or apically.

Isthmus Fracture.—This refers to complete separation of the occlusal portion from the proximal portion of the restoration. In only two instances was the proximal portion cracked but not dislodged from the cavity.

Defective Proximal Margin.—This refers to a buccal or lingual proximal margin in which obvious ditching has occurred as a result of a breakdown of either the amalgam, the enamel or both. Minor defects detectable only with an explorer were not counted as defects. No attempt was made to classify the degree of the defect.

Scalloped gingival margin.—This refers to the defect seen radiographically in which a concavity exists occlusal to the gingival margin. This concavity is thought to be due to improper placement of a wedge intended to reduce gingival overhang.

TABLE 1 Defects in class II restorations at the end of the first year of the study.

Defects	Young permanent first molars		Deciduous first molars		Deciduous second molars	
	Number	Per cent	Number	Per cent	Number	Per cent
Total restorations	64		149		164	
Overhangs	13	20.3	37	24.8	39	23.7
Isthmus fractures	1	1.5	9	6.4	2	1.2
Defective proximal margins	3	4.7	46	30.8	46	28.0
Scalloped gingival margins	4	6.3	4	2.7	2	1.2
Recurrence of caries	2	3.1	2	1.3	3	1.8

TABLE 2 Location of margin defects in class II restorations at the end of the first year of the study.

Defects	Deciduous first molars		Deciduous second molars	
	Maxillary	Mandibular	Maxillary	Mandibular
Total restorations	73	76	75	89
Margin defects:				
Lingual	3	13	6	5
Buccal	7	23	13	22

Recurrence of Gingival Caries.—This refers to the appearance of radiolucency apical to the gingival margin. Although there was no assurance that all carious tissue had been removed at the time of cavity preparation it was assumed that the recurrence of caries took place after the restoration had been placed.

RESULTS

The results of the initial pilot survey are presented in Table 1. Overhangs in restorations in both permanent and deciduous teeth and proximal margin breakdown in restorations placed in deciduous teeth were the defects which occurred most frequently.

The location of the margin defects is seen in Table 2. Statistical analysis of

these data revealed that margin defects occurred significantly more often on the buccal margin than on the lingual margin in mandibular first molars. In maxillary first molars there was no difference. Significantly more margin defects occurred in mandibular first molars than in maxillary first molars. Proximal margin defects occurred more frequently on the buccal than on the lingual margin in mandibular second molars ($P < .05$) and also in maxillary second molars but the difference was only of borderline significance ($P > .05$, $< .10$). There was no significant difference in the incidence of margin defects in mandibular second molars compared to maxillary second molars.

In a previous paper¹¹ it was suggested that margin defects could be due to unsupported enamel in large carious cavities and an altered type of cavity was sug-

TABLE 3 Defects in class II restorations in deciduous molars placed over a three-year period, including those with altered cavity design.

Defects	Deciduous first molars		Deciduous second molars	
	Number	Per cent	Number	Per cent
Total restorations	400		296	
Overhangs	44	11.0	23	7.8
Isthmus fractures	4	1.0	1	0.7
Defective proximal margins	81	20.2	51	17.2
Scalloped gingival margins	10	2.5	5	1.6
Recurrence of caries	1	3.0	0	0

TABLE 4 Restorations in deciduous molars studied during the four-year period of the study.

Restorations	Deciduous first molars	Deciduous second molars	Total
Total restorations	549	460	1,009
Cusps unreduced	468	412	880
Cusps reduced : maxillary	12	19	31
Cusps reduced : mandibular	69	29	98

gested as illustrated in Figures 1, 2 and 3. At the beginning of the second year of the present study this design was used for large carious cavities or whenever the extension for prevention on the buccal or lingual surfaces appeared to leave enamel at the height of the cusp weakly supported. The study was then continued for three more years. The results of the final three-year period are depicted in Table 3.

The total number of restorations studied during the four-year period are seen in Table 4.

ANALYSIS OF DATA

Overhangs.—As far as overhangs were concerned, every effort was made to improve wedging technique after the findings of the first year of the study were

analysed. More attention was paid to immediate postoperative finishing by means of floss and by carving away excess amalgam. Although there was a significant reduction in the incidence of overhangs, they continued to occur rather frequently. One possible explanation is that Edmonton water has low fluoride levels and cavities when they occur, are often large and deep and difficult to wedge properly. When a wedge is placed from the buccal to the lingual side for the insertion of a deep disto-occlusal restoration in a mandibular deciduous first molar the wedge will often emerge through the lingual surface of the interdental papilla. In addition, undergraduate students are usually rather inexperienced at removing in vivo overhangs because preclinical teaching aids leave much to be desired for the teaching of this problem.

TABLE 5 Rate of occurrence of margin defects in class II restorations in deciduous first molars with unreduced cusps.

	Mandibular deciduous first molars		Maxillary deciduous first molars	
	Buccal	Lingual	Buccal	Lingual
Margins examined	224	205	237	239
Defective margins	65	11	27	7
Defect rate	29.02%	5.34%	11.39%	2.93%

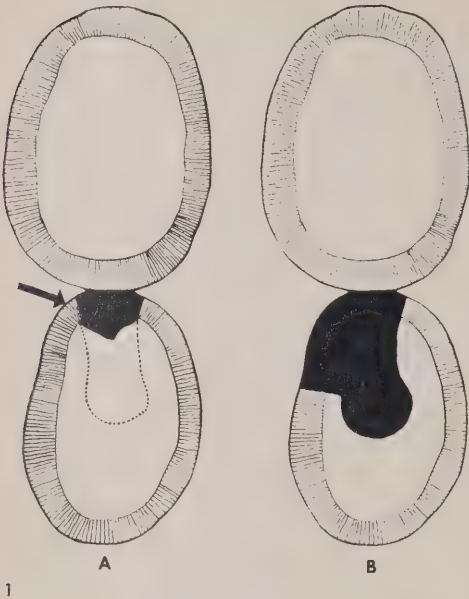


FIGURE 1 A. Occlusal view showing weakly supported enamel at the buccal proximal aspect of a prepared cavity. In order to overcome this problem the cavity was enlarged as illustrated in B.

FIGURE 2 Cavity design used where a cusp was weakly supported. If two cusps were weakly supported the tooth was usually restored with a stainless steel crown.

FIGURE 3 Adjacent class II restorations in mandibular deciduous first and second molars placed in 1957.

TABLE 6 Rate of occurrence of margin defects in class II restorations in deciduous first molars with cusps reduced.

	Mandibular deciduous first molars		Maxillary deciduous first molars	
	Buccal	Lingual	Buccal	Lingual
Cusps reduced	23	46	7	5
Defective margins	1	1	1	0
Defect rate	4.35 %	2.17 %	14.29 %	0 %
Expected defect rate	29.02 %	5.34 %	11.39 %	2.93 %
Significance	P = <.05		P = >.50	

Proximal Margin Defects.—Such defects may occur on the buccal or lingual margins or both. It was decided therefore that the best method for testing the altered cavity design was to calculate first the margin defect rate for all margins where the cusp was not reduced, including those in the altered cavity design where only one cusp was reduced. The results for class II restorations in deciduous first molars are seen in Table 5.

This rate was then compared to the rate that occurred when the cusp was reduced as shown in Table 6.

It can be seen that reducing cusps that are weakly supported can significantly reduce the incidence of buccal margin defects in proximal restorations in mandibular deciduous first molars. The improvement in lingual margin defects was only of borderline significance. Calculations could not be made for the buccal and

lingual margins for the maxillary deciduous first molars or for both maxillary and mandibular deciduous second molars where the cusp was reduced because of an insufficient number of cases. The totals, however, are shown in Tables 7 and 8.

TIME AND TYPE OF MARGIN DEFECT

The longest period of time any restoration was in the mouth at the time of the last examination was forty-two months and the shortest was three months. The average time was fifteen months. It was not always possible to determine the exact time when the margin defect occurred since many of the children were examined only at six-month intervals. Thus a defect which might occur on the day following an examination would not be detected until six months later. In almost all cases the margin as well as the

TABLE 7 Rate of occurrence of margin defects in class II restorations in deciduous second molars with unreduced cusps.

	Mandibular deciduous second molars		Maxillary deciduous second molars	
	Buccal	Lingual	Buccal	Lingual
Margins examined	243	252	242	247
Defective margins	40	7	28	9
Defect rate	16.43 %	2.78 %	11.57 %	3.64 %

TABLE 8 Rate of occurrence of margin defects in class II restorations in deciduous second molars with cusps reduced.

	Mandibular deciduous second molars		Maxillary deciduous second molars	
	Buccal	Lingual	Buccal	Lingual
Cusps reduced	19	10	12	7
Defective margins	2	1	0	0
Defect rate	10.53 %	10.0 %	0 %	0 %
Expected defect rate	16.43 %	2.78 %	11.57 %	3.64 %

isthmus defects occurred between the sixth and twelfth month after the restorations were placed. This finding is similar to that recently reported by Nadal et al.⁹

In the first two years of the study no attempt was made to determine whether the defect was due to amalgam or enamel breakdown or both. In the third and fourth year of the study this was investigated. In 45 out of 91 defective margins it was impossible to tell but in the remainder, amalgam was judged to have failed twice as often as enamel. This figure is significant.

Figures 3 to 11 are examples of clinical cases followed in this study.

DISCUSSION

The results of this study show that when the recommended procedures as suggested by Lampshire⁵ (proximal retention grooves, wide isthmus, rounded pulpal wall and rounded pulpal-axial line angle) are incorporated in class II cavi-

ties in deciduous molars isthmus fractures rarely occur in the amalgam restoration. Equally good results were obtained when the pulpal floor was flat. However, proximal margin defects occurred frequently and also significantly more often in mandibular than maxillary deciduous first molars and more often on the buccal margin than on the lingual margin of both first and second mandibular deciduous molars. Although the reason for this is not known an explanation might be found in the morphology of mandibular molars. The contact area is usually closer to the buccal surface and if the caries process spreads at a uniform rate buccally and lingually, one would expect buccal margins to be more often weakened because of the pronounced taper of the buccal surface of these teeth. This explanation is somewhat discounted by the finding that the defects were judged more often to be due to amalgam rather than enamel breakdown. There is the possibility that the greater amount of functional wear seen on the buccal surface of mandibular

TABLE 9 Frequency of margin defects in deciduous molars.

	Maxillary		Mandibular	
	Buccal	Lingual	Buccal	Lingual
Deciduous first molar	11.39 %	2.93 %	29.02 %	5.34 %
Deciduous second molar	11.57 %	3.64 %	16.43 %	2.78 %



FIGURE 4 Same case as illustrated in Figure 3, three years later. Note the gross buccal margin defect in the deciduous second molar involving both enamel and amalgam. Less pronounced margin defects can be seen in the deciduous first molar.

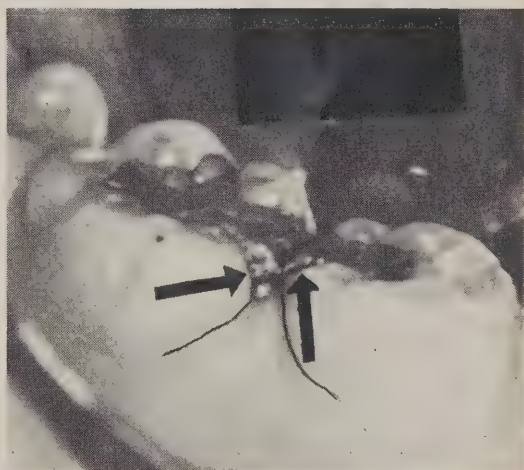


FIGURE 5 Same case as illustrated in Figure 3. Buccal view 3 years later. Note the buccal proximal margin defects in both molars.



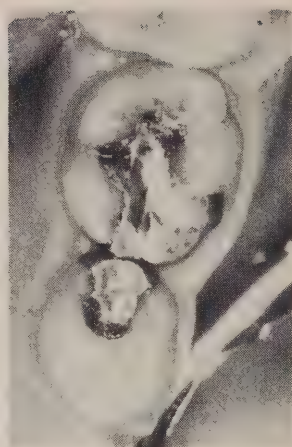
FIGURE 6 Proximal caries on the mesial surface of a deciduous second molar. There was also distal caries in the deciduous first molar.



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8



9

FIGURE 7 Same case as illustrated in Figure 6. Both teeth were restored with amalgam. After removing all caries the buccal cusp of the deciduous second molar was left weakly supported. It was then reduced to the occlusal floor and restored with amalgam.

FIGURE 8 Same case as illustrated in Figure 6 two years later. Note the buccal proximal margin breakdown in the deciduous first molar. Note also the slight marginal ridge defect in the deciduous second molar. The buccal proximal margin on this tooth appears to be sound.

FIGURE 9 Same case as illustrated in Figure 6, 3 years later. Note the lingual proximal margin defect in the deciduous second molar. The buccal proximal margin on this tooth appears to be sound.

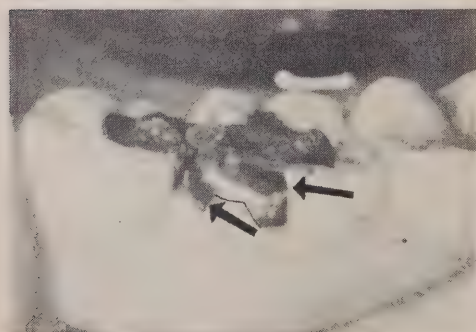


FIGURE 10 Buccal aspect of the same case as illustrated in Figure 9. The buccal margin of the restoration in the deciduous second molar appears to be sound.



FIGURE 11 Proximal class II restorations in adjacent deciduous maxillary first and second deciduous molars. Proximal margin defects did not occur so frequently in maxillary teeth.

molars might result in the enamel adjacent to the amalgam becoming thin and sufficiently weakened to be slightly deformed on biting pressure, permitting oral fluids to enter the margin more easily and thereby increase corrosion. If this were the cause, one should expect to find a higher incidence of proximal margin defects on the lingual margin of maxillary teeth; but this was not the case.

As Swartz and Phillips¹² have reported, there is a higher mercury content at the margin than in the bulk of an amalgam restoration and this most definitely must be a factor in margin breakdown. The finding in our study that such breakdowns occur more often in certain areas of restorations merits further study. Furthermore, since both Nadal's⁹ and this study did not involve long periods of time, it seems obvious that improved amalgam alloys are urgently needed in order to reduce the total time necessary to provide restorative dental services for the public, especially in view of the likelihood of increased longevity.

SUMMARY

A four-year study of defects in class II amalgam restorations in deciduous molars placed in the clinic of the Faculty of Dentistry, University of Alberta, has been reported. The following was noted:

1. A wide isthmus, rounded pulpal wall (or flat pulpal wall) with rounded pulpal axial line angle and side retention grooves resulted in only sixteen isthmus fractures in 1,009 restorations.

2. Proximal margin defects occurred more frequently than any other type of defect. The next most frequent defects found were gingival margin overhangs.

3. In deciduous first molars, margin defects occurred more often on the buccal than on the lingual surface in mandibular

teeth and more often in mandibular teeth than maxillary teeth (Table 9).

4. In second molars, buccal margin defects occurred more often than lingual defects in mandibular teeth but not in maxillary teeth (Table 9).

5. Removing weakly supported cusps and restoring them with amalgam will significantly reduce the incidence of buccal margin defects in mandibular deciduous first molars.

6. Failure of the amalgam itself was responsible for significantly more margin defects than breakdown of enamel. This suggests the need for a better filling material or alternative methods for restoring these teeth.

RÉSUMÉ

Les auteurs font part d'observations qu'ils ont faites, durant quatre ans, à la clinique de la faculté dentaire de l'Université d'Alberta sur les défauts des obturations de classe II en amalgame dans les molaires primaires.

Ils ont constaté seulement seize fractures dans mille-neuf obturations où on avait pratiqué un isthme large, des parois pulpaire arrondies (ou plates), un angle arrondi à la ligne axiale de la paroi pulpaire et des sillons de rétention de chaque côté.

Les points faibles ont surtout été trouvés aux parois proximales; en second lieu, aux parois gingivales où on remarquait souvent un surplus.

Les points faibles des joints dans les premières molaires primaires ont été décelés plus souvent dans les dents inférieures à la paroi buccale et plus souvent dans les dents inférieures que dans les supérieures.

Dans les secondes molaires, les défauts des joints buccaux étaient plus fréquents que du côté lingual dans les dents inférieures, mais non dans les dents supérieures.

On diminue considérablement l'incidence des faiblesses aux joints buccaux des premières molaires primaires inférieures en éliminant les cuspes qui ne sont pas suffisamment soutenus et en les restaurant avec de l'amalgame.

Il faut tenir l'amalgame responsable de plus de faillites à ces endroits que la résistance de l'émail.

Ces recherches indiquent la nécessité de trouver une meilleure substance obturatrice ou de changer les techniques pour obturer ces dents.

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University of Alberta

Some Research Findings from the Burlington Orthodontic Research Centre of Particular Interest to Clinicians

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Before introducing this subject, it might be useful to review the main features of

the Burlington Orthodontic Research Centre.

Based upon a report delivered at the annual meeting of the Ontario chapter, Canadian Society of Dentistry for Children, Toronto, May 20, 1961.

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Organized in 1952, the project constitutes part of the program of the orthodontic department of the Faculty of Dentistry, University of Toronto. The staff consists of an administrator who is also senior research fellow, six orthodontists, including the chairman of the department, two paedodontists and two full-time tech-

nician-secretaries. The project has been financed mainly by a grant-in-aid from the federal government. Additional assistance has come from the local Lion's Club and also the Faculty of Dentistry.

The three main objectives of the project may be summarized as follows:

1. To evaluate the relative efficacy of preventive-interceptive orthodontic procedures.

2. As an essential part of the first objective, to collect a library of records, (derived from a representative group of children), which illustrates the changes in growth and development of the cranio-facial complex.

3. To determine the relative roles of hereditary and environmental factors in governing cranio-genesis.

The library of records which has been accumulated includes the following:—

1. A four-page medical and dental history, including height and weight data.

2. A clinical assessment of occlusion and facial growth.

3. Five cephalometric radiographs including: (a) lateral plate with mandible in rest position, (b) lateral plate with mandible in closed position, (c) lateral plate with the mandible in open position, (d) right and left oblique views, and (e) anteroposterior plate.

4. One wrist radiograph.

5. Dental casts with wax bites.

6. Where needed, periapical radiographs.

7. Black and white lateral and front view photographs.

The samples which are presently included in the centre's files are shown in Figure 1.

Research studies, either completed, or in progress* fall into three main categories:

- (a) Problems of epidemiology.

- (b) Studies of morphogenesis.

- (c) Genetic analyses.

STUDY No. 1

In the general area of morphogenesis, some observations carried out by one of us (M.E.H.) on the eruptive process, are perhaps of particular interest to the clinician. The first study was concerned with factors governing clinical eruption. The Burlington data provide an unusual opportunity for further clarification of the possible relation between the eruptive process and growth and development of the masticatory apparatus.

The aim of the study was to determine whether or not tooth size and tooth position at three years, together with the rate of upward movement of the teeth between this age and six years, bear any relation to clinical eruption at six years.

The sample included records of fifty males at 3, 4, 5, and 6 years of age. Observations were restricted to mandibular first permanent molars only. On tracings, taken from oblique cephalograms, tangents were drawn along the inferior border of the mandible, and then the following bilateral measurements were made:

- (a) Molar Height.—The perpendicular distance from the mid-point between the two highest cusps of the first permanent molar to the inferior border of the mandible.

*Progress reports from the Centre published annually summarize all the research studies in progress. These reports are sent to the leading dental schools in Canada and in the United States.

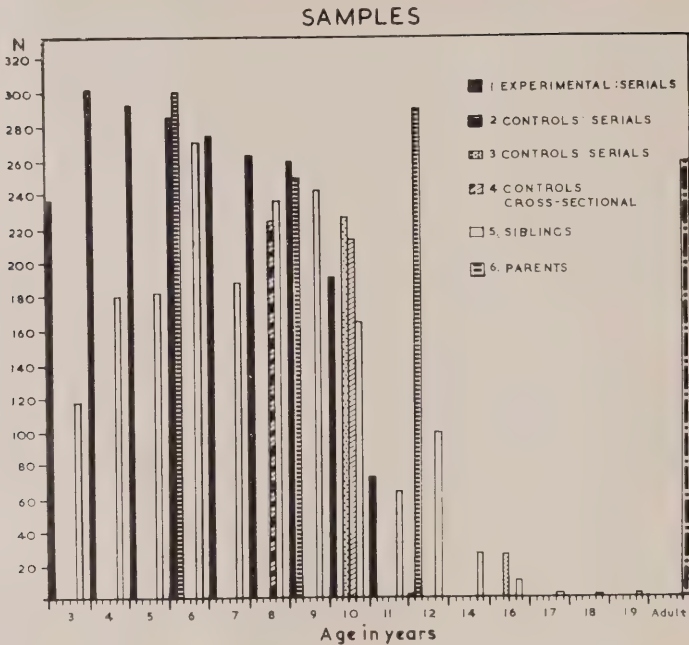


FIGURE 1

(b) Tooth Size.—Mesio-distal width of the tooth.

(c) Clinical eruptive time.—The time when the tooth actually appeared in the mouth. This was derived from special forms supplied to the parents and by examining the child.

The following results were noted:

1. Between the ages of 36 and 72 months, the crown of the mandibular first permanent molars is constantly moving away from the inferior border of the mandible.

2. Individuals of the same age, within the range 35 to 40 months, may have teeth anywhere from 14.9 to 19.9 mm. above the inferior border of the mandible.

3. The mesio-distal width of the mandibular first permanent molars was smaller in children with clinically erupted teeth by age six years, than those without teeth erupted at this age.

4. No significant difference could be found in the position* of the teeth at 36 months in the eruptors or non-eruptors at 72 months.

5. The rate of eruption varies significantly between the two groups of children; those with mandibular first permanent molars in clinical eruption at 72 months had an eruptive rate of 10.9 mm.

*Height above the inferior border of the mandible.

for three years whereas the non-erupters had a rate of only 6.7 mm. for three years.

6. The rate of movement of the teeth between the ages of three and four years is positively correlated with the overall rate between three and six years.

In its clinical application, the value of the study lies in the fact that since it is concerned with the effects of one stage of growth and development upon the next stage, it thereby suggests a usefulness in predicting clinical events. Other investigators have shown that the pre-eruptive stage of eruption is controlled by gene action. It has also been previously shown that the time taken for the tooth to reach clinical eruption is governed by hereditary factors. Tooth size, rate of movement and tooth position may therefore be said to be controlled by gene function. The rate of movement and tooth size influence clinical eruption. Thus it would appear that clinical eruption is under genetic control.

STUDY No. 2

A second study by one of us (M.E.H.) attempted to show the possible relation between clinical eruption, occlusion and development of the facial skeleton, in a group of Angle Class I and Class II cases.

The sample included 154 boys from the six-year old control group and represents a cross-sectional sample rather than a serial sample as in the preceding report. Similar records taken as close as possible to the sixth birthday were used. The average age was 6.1 years.

The first problem was to classify the occlusion according to Angle's classifications. This produced fifty-five Class I cases and thirty-nine Class II cases. The second problem was to record the presence or absence of first permanent molars in clinical eruption. Thirdly, an attempt was made to determine from models

whether or not these two samples differed significantly in the size of certain dental and skeletal characteristics, such as arch width and circumference, and determine maxillary and mandibular width and length from cephalometric head plates.

A comprehensive analysis of the findings revealed that the group with malocclusion had a greater number of permanent molars in clinical eruption at 6.1 years, that is, 55.7 per cent of molars present in the abnormal group as compared to 29 per cent in the normal group.

Of the molars present in the group with malocclusion there was almost equal distribution of maxillary and mandibular teeth. In the Class I group, however, there was a greater number of mandibular molars present.

In a comparison of dental and skeletal characteristics between Class I and Class II Division 1 cases only, certain differences were observed. The abnormal children were found to have larger first permanent molars in arches which were reduced in width and circumference. In their skeletal development Class II children were found to be lacking in mandibular length and width but not to a degree significantly different from those with Class I relationship.

SUMMARY

A capsule summary of these reports should point out that large molars erupt more slowly than smaller molars, and that their behaviour is controlled to a considerable degree by hereditary factors. It has been suggested that in Class II type occlusions, permanent molars erupt earlier than in children with Class I occlusions and that the latter tend to erupt mandibular molars first. It has also been shown that Class II malocclusion cases have mandibular arches that are narrower and shorter in circumference than those of Class I individuals.

CONCLUSIONS

Two studies concerned with the process of eruption in its relation to growth of the cranio-facial skeleton carried out at the Burlington Orthodontic Research Centre have been reviewed. The investigations serve to illustrate quite clearly just one area from the variety of research possibilities which are available at the Centre.

RÉSUMÉ

Les auteurs rapportent les résultats de deux projets de recherche menés au Centre de recherches en orthodontie de Burlington.

Le premier projet touchait aux facteurs qui régissent l'éruption en clinique; son but était de déterminer si le volume et la position de la dent, à trois ans, et le rythme du mouvement de la dent en direction supérieure, entre trois et six ans, influencent l'éruption clinique à 6 ans.

Ces recherches ont montré que: (1) entre l'âge de 36 et de 72 mois, la couronne de la première molaire permanente inférieure s'éloigne constamment du bord inférieur de la mandibule. (2) Les enfants du même âge entre 35 et 40 mois d'âge, peuvent avoir des dents qui sont situées entre 14.9 et 19.9 mm. au-dessus du bord inférieur de la mandibule. (3) La largeur mésio-distale de la première molaire permanente inférieure est moins considérable chez les enfants qui possèdent en bouche ces dents à l'âge de six ans que chez ceux qui n'ont pas encore ces dents au même

âge. (4) Il n'y a pas de différence notable dans la position des dents (hauteur au-dessus du bord inférieur de la mandibule) à l'âge de 36 mois, chez les enfants de six ans dont les dents sont sorties et chez ceux qui ne les ont pas. (5) Le rythme de l'éruption diffère considérablement chez les deux groupes d'enfants; ceux qui ont leurs premières molaires permanentes inférieures à 72 mois ont eu un rythme d'éruption de 10.9 mm., pour trois ans, tandis que ceux, qui ne les ont pas eu, un rythme de 6.7. (6) Entre 3 et 6 ans, le rythme de mouvement des dents, entre trois et quatre ans, se superpose exactement au rythme général.

On a remarqué que les grosses molaires sortent plus lentement que les petites molaires et que leur comportement est beaucoup conditionné par des facteurs héréditaires.

Le deuxième projet de recherche étudiait les relations qui peuvent exister entre l'éruption clinique, l'occlusion et la croissance du crâne entre un groupe de cas de classe I et un autre de classe II d'Angle.

Cette étude a trouvé que, dans les occlusions de classe II, les molaires permanentes sortent plus tôt que chez les enfants ayant une occlusion de classe I et que, chez ces derniers, les molaires inférieures ont une tendance à sortir plus tôt.

On a aussi constaté que, dans les cas de malocclusion de classe II, les mandibules ont une circonférence plus étroite et plus courte que dans les classes I.

124 Edward Street

Board of Governors • The Board of Governors of the Canadian Dental Association is composed of members selected by dental organizations in all ten provinces. The Board meets annually just before the national convention of the Association. Any member of the Canadian Dental Association may participate in the Board's annual meeting. Canadian dentists are urged to avail themselves of this opportunity to participate in the affairs of their profession.

CASE REPORT

Endodontic Diagnosis and Treatment: Report of a Failure

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Endodontic therapy should be undertaken only after a thorough clinical examination. This examination should include the interpretation of a well exposed radiograph and should result in a provisional diagnosis.

Successful therapy depends not only upon the selection of the correct treatment, as indicated by the diagnosis, but also upon the ability of the dentist to render and control this treatment adequately.

The first requirement of adequate treatment is the relief or control of pain and the prevention of its recurrence. With pain under control, the next requirement is removal of the pathosis without further injury to the involved tissues.

The case history presented illustrates the inadequacy of the radiographic examination, the inability of the dentist to render the treatment as planned and some reasons for the loss of the involved tooth.

CASE REPORT

A 19-year old white female presented, by referral, September 27, 1961, complaining of acute "toothache". The patient indicated

that the pain particularly involved the mandibular right second bicuspid and reported that this tooth had previously received a single emergency treatment for "toothache" on June 8, 1961. This treatment relieved the pain and had consisted of making an occlusal opening into the pulp chamber of the involved tooth. The root canal was left open for drainage and the patient was dismissed. The tooth had remained comfortable until just before she presented this second time, again with acute "toothache".

The clinical examination showed that the mandibular right first and second bicuspid and first molar were tender to percussion and that the first bicuspid and first molar responded within normal limits to the electric vitalometer, while the second bicuspid did not. The second bicuspid had a large occlusal cavity continuous with the root canal and mesial and distal amalgam restorations. A fine probe was unable to negotiate the root canal. Intra-oral examination of the soft and hard tissues was essentially negative except for a slight tenderness on palpation of the submandibular lymph node on the right side.

A radiograph (Figure 1) was obtained showing the lower second bicuspid with a radio-opaque mass lodged at mid-root in a fairly straight tapering root canal and a large diffuse periapical rarefaction. The adjacent teeth and tissues were normal. A contra-lateral radiograph was not considered necessary for differential diagnosis because the periapical lesion and pain were associated with a pulpless tooth.

A diagnosis of acute periapical abscess superimposed on a dental granuloma was made. Endodontic therapy was planned at the patient's request, to be dependent on the

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FIGURE 1 Radiograph showing the mandibular right second bicuspid and associated periapical rarefaction. There is a radio-opaque mass in the root canal at mid-root and also the mesial and distal remains of old amalgam restoration.



FIGURE 2 Radiograph of the same tooth after initial treatment. The large radio-opaque mass has moved into the coronal cavity and a smaller piece is lodged in the apical third of the root canal. The instrument tip is shown by-passing the second obstruction.

successful removal from the canal of the radio-opaque mass. The mass was tentatively identified as amalgam fractured off the remaining parts of a mesio-occluso-distal restoration.

Immediate treatment consisted of by-passing the blockage using fine reamers and EDTAC* irrigation. A large piece of amalgam was removed and the reamers could then be passed further down the canal. However, another obstruction was encountered in the apical third of the root canal and a second radiograph (Figure 2) revealed a second smaller piece of amalgam. This piece had been dislodged when the instruments passed the original blockage above and was now blocking the apical third of the canal. Further instrumentation and irrigation with EDTAC* seemed to be successful in enlarging the canal and in by-passing this second blockage until pain was produced by one of the instruments. A third radiograph (Figure 3) taken to explain the additional pain showed a lateral apical perforation.

When the perforating instrument was removed, however, a profuse flow of thick yellow pus resulted and the patient noticed a marked relief from the generalized soreness and "toothache". The canal was again left open for drainage and the patient dismissed. On returning two weeks later the "toothache" had subsided and the patient stated that the area had been comfortable since shortly after the previous appointment.

Renewed instrumentation was again unsuccessful in by-passing the obstruction. The proximity of the mental foramen precluded periapical surgery and the tooth was extracted.

The extracted tooth is shown in two views, a view similar to that of the radiograph (Figure 4) and a view with the tooth rotated $\frac{1}{4}$ turn (Figure 5). Microscopic examination revealed that the apical foramen opened at the extreme tip (Figure 5) of the apex.

DISCUSSION

The treatment of this tooth was complicated because the patient was out of town for extended periods, originally for

*EDTAC—NØ, a proprietary solution, after Ostby, of ethylenediamine tetra-acetate with cetyltrimethylammonium bromide (Cetavlon, Ayerst, McKenna & Harrison) for cleansing and widening root canals (Union Branch Co. Inc.).



FIGURE 3 Radiograph showing the final position of the root canal file perforating the root after a small piece of amalgam became immovably lodged in the canal.

three months' summer employment and latterly for a two-week holiday period.

The "open canal" treatment of the acute toothache was an indirect complication of the treatment. This treatment combined with a "comfortable tooth" for a lengthy time after the initial treatment resulted in the patient delaying treatment and in the fractured amalgam that blocked the drainage and then the canal itself. The use of the EDTAC* to soften the root dentine may have facilitated the apical perforation, or the obstruction may have deflected the instrument into a lateral canal.

Some authors recommend that root canals should be sealed between endodontic treatments, even in cases of acute toothache. If this could have been done, perhaps the broken filling might have been prevented.

When the extracted tooth was examined, however, an extreme apical buccal curvature was noted (Figure 5), and it is doubtful whether a root canal filling could have been placed successfully in any case.

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FIGURE 4 Photograph of the extracted bicuspid in a similar position to that shown in the radiographs in Figures 1, 2 and 3.

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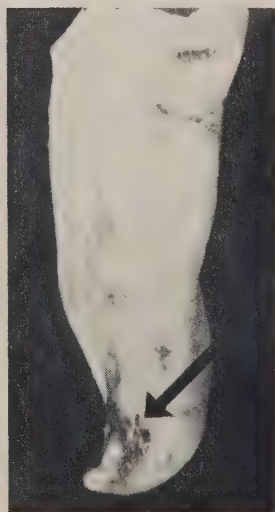


FIGURE 5 Photograph of same tooth rotated one-quarter turn to the distal. The extreme buccal curve of the apex and also the mesio-buccal opening of perforation marked by an arrow are in evidence.

SUMMARY

A case history has been presented to show the inadequacy of radiographs as an absolute guide to root canal morphology and to treatment. One complication

of the "open canal" treatment for toothache and the need for "patient control" in planning endodontic therapy was illustrated.

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RESEARCH ANNOTATION

A REVIEW OF TOOTH TRANSPLANTATION*

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The ultimate goal of tooth transplantation research, both on clinical and experimental levels, has been the development of the tooth bank. The clinical art of transplantation which dates from the sixteenth century, dominated the early history of this procedure and of dentistry in some countries. Experimental study, however, received only sporadic interest before 1940.

Today, the status of the operation is that of an experimental procedure confined to laboratory animals. One exception to this observation concerns the autogenous transplantation of developing third molars to first molar sockets in young adults. When such a patient is

threatened with the loss of a permanent first molar, transplantation should be evaluated in the treatment plan.

Experimentally, tooth transplantation is focused well beyond the present clinical level. Recent investigations have concentrated on the refinement of operative and post-operative procedures to improve the success of immediate transplantation in laboratory animals. Results with developing teeth in hamsters and monkeys have been favourable.

Concerning the potential tooth bank, cold storage, tissue culture and related methods have been investigated as possible banking media. Periodontal regeneration including the epithelial attachment and cementum have been seen in transplanted teeth following four days' incubation in tissue culture. The pulpal elements, however, fail to repair and are replaced by host connective tissue and bone leading to eventual ankylosis. Present studies concerned with improving the nutrient media may eliminate this pulp pathology.

The question of immunology remains.

*Summary of paper presented to the Montreal Dental Research Society, November 1961.

It is agreed by most investigators that transplants with viable pulp tissue, if successfully revascularized, would stimulate antibody formation. Thus a solution

to this problem which is receiving vast study in related fields is required before homologous tooth transplantation can assume a useful role in clinical dentistry.

ABSTRACTS

AETIOLOGY AND PREVENTION OF PERIODONTAL BREAKDOWN

E. W. Fish, D. Progress 1:234, July 1961

Recent studies have shown that (1) the so-called "interdental papilla" is not a papilla but a ridge-shaped depression, or col, between two peaks formed by the buccal and lingual papillae; (2) the sides of the col are covered with a vestigial remnant of the enamel organ, which unless interrupted by ulceration is gradually replaced by stratified squamous epithelium; and (3) there is no "space" between teeth that have erupted in contact.

The epithelial remnant of the enamel organ is both physically and biologically incapable of providing adequate protection as a surface covering for the deeper tissues. When the epithelial remains of the enamel organ are exposed to the surface, the underlying connective tissue becomes inflamed.

There apparently are two distinct anatomical arrangements of the tissues that form the interdental septum, and each exhibits its own peculiar response to irritation. There are, accordingly, four possibilities to be considered: (1) the centre of the col may still be covered with enamel

epithelium; (2) the enamel epithelium on its crest may have been replaced by stratified squamous epithelium; and in each of these conditions the col may be (3) clinically healthy or (4) it may be clinically inflamed and ulcerated.

Clinically healthy col covered with enamel epithelium is found only in adolescents or very young adults. It appears to be a transient stage during which the col is undergoing re-epithelialization. If this process is unduly delayed, there is constant danger that the centre of the col will become ulcerated and most of the enamel epithelium destroyed. Treatment at this stage should be confined to maintaining the health of the oral epithelium covering the buccal and lingual papillae, thereby strengthening its attachment and encouraging it to grow through the interdental space and over the col with stratified squamous epithelium as soon as possible. This can be done by brushing the gum margins regularly and carefully, using a soft brush that cannot itself cause detachment of the papillae from the col. If there is any tendency toward detachment—that is, if the papillae are inflamed and there is bleeding upon brushing—the gum margins must be brushed only toward the biting surfaces of the teeth. One

should never attempt to scale between the teeth at this stage of development.

Once the col is detached from the teeth, it becomes acutely inflamed and rapidly breaks down, establishing a deep interdental ulcer that has little chance of healing without surgery. The disservice that may be done to the young patient by opening up a healthy interdental area is considerable. In any case, there cannot possibly be any calculus present because there is no free space in which it can be deposited. If an orthodontic band must be fitted to a tooth that is in firm contact with an adjacent tooth, the patient should be referred to a periodontist as soon as the band is removed so that he can treat any detachment and probable ulceration.

If an ulcer develops, the buccal and lingual papillae may be sutured together across the ulcer. A small curved needle carrying a silk suture is passed through the base of the buccal papilla, on through the interdental space and out through the base of the lingual papilla. The needle is removed, and the needle end of the suture is snapped between the contact points of the teeth; the suture is tied off on the buccal side to make the knot accessible, or absorbable suture may be used. As an alternative a dressing may be so used that it holds the buccal and lingual papillae in place over the ulcer. This is more difficult, however, and unless the papillae are sutured in place, usually it is better to cut them away, leaving a somewhat flatter incidental septum and a clearly accessible interdental space. The young patient is taught how to keep the interdental spaces clean and the new stratified squamous epithelium, which covers the healed col, well keratinized. Floss silk, if carefully used, is common for this purpose. Some young people can be taught to make tooth brush bristles do this work, and others may have large enough spaces to use wood points.

Once the interdental septum has become re-epithelialized with stratified squamous epithelium, it is no longer liable to the rapid, almost catastrophic, breakdown that may occur when there is only enamel epithelium present. The

only treatment of the healthy col, once it is re-epithelialized, is regular scaling to ensure that there is no calculus deposited in the sulci, and the use of floss silk, with points, or a special toothbrush drill to maintain firm keratinization of the surface.

REACTIONS OF TIN AND FLUORIDE IONS WITH ETCHED ENAMEL

*W. E. Cooley. J.D. Res. 40:1199,
November-December 1960*

Acid-etched but otherwise sound and uniform samples of human incisor enamel were treated by brushing with sodium fluoride or tin fluoride solutions for various times at different concentrations and pH levels. After treatment, the samples were exposed to strong acid to dissolve specific thicknesses of enamel. The acid solutions were analysed chemically for tin or fluoride ions. The experiments support the following conclusions.

Both tin and fluoride reacted with enamel much more rapidly during the first few minutes of brushing than they did afterward. Fluoride taken up by enamel from either sodium fluoride or tin fluoride solution was found at appreciable depths in the enamel. Most of the tin from tin fluoride solution was laid down as a uniform coat on the surface or slightly within the enamel.

Tin and fluoride solutions in the concentration range 0.00001-0.001 M deposited measurable amounts of tin and fluoride onto enamel, and the reactivity increased with increasing concentration. Tin or fluoride solutions from 0.001 to 0.2 M showed little change in reactivity with enamel as concentration was varied. As sodium fluoride concentration was raised from 0.2 M to saturation, the reactivity of the fluoride with enamel increased with concentration, reaching a maximum value of 40-50 μ g. of fluoride laid down per square centimetre of enamel in 4 hours under the conditions used in this work.

In the reaction of tin with enamel, high tin concentration, high pH, long treatment times, or the presence of rapidly hydrolyzing tin salts favoured an adhesion process whereby precipitated tin oxide accumulated on the surface. If fluoride was present, some of it was occluded in the precipitate.

A PRACTICAL METHOD FOR REDUCING CARIES IN CHILDREN NOT RECEIVING THE ESTABLISHED BENEFITS OF COMMUNAL FLUORIDATION

J. C. Muhler. *J. Den. Children* 28:5, 1st quart. 1961.

The benefits of fortifying a fluorine-deficient communal water supply with fluorine to the optimal level have been clearly established by repeated clinical studies. It is highly effective, safe, broadly applicable, and low in cost per person per year. No other available method for reducing dental caries is so easily applied on a mass basis. Notwithstanding these pronounced advantages, communal fluoridation has the disadvantage of being limited in benefit to those children who live in an area which has a community water system and a community willing to fluoridate. While it appears impractical at the present time to feel optimistic about providing the same anticariogenic benefits to rural children at the same low cost, mass application, and high degree of effectiveness as offered by communal fluoridation, there is considerable evidence to suggest that equal benefits can be obtained in a practical manner for rural children through the use of "Multiple Principles of Preventive Dentistry." Actual clinical evidence is available to support the practicability of this idea. In a 30-month clinical study conducted in an optional fluoride area, it has been shown that by adding another effective preventive tool—topical stannous fluoride—that there is an additive effect of each. One of the most interesting aspects of these data was that in

the children receiving the benefits of both communal fluoridation and topical stannous fluoride therapy that there were no new two-surface cavities in any of the carious teeth. Such a finding would suggest therefore, that when a combination of effective preventive agents are used in one study that the effects may be additive. It is suggested that a practical and highly anticariogenic combination of "Multiple Principles of Preventive Dentistry" would be: (a) communal fluoridation; (b) single application topical stannous fluoride therapy; (c) a stannous fluoride-containing dentifrice; (d) no eating between meals; (e) improved (and good) toothbrushing habits; and, (f) regular visits to the dentist. If it is not possible to use some one of the six mentioned preventive agents, then a more strict and rigid adherence to the remaining five techniques must be practised in order to obtain the optimal effects.

In order to test this hypothesis in a non-fluoride area, a three-year clinical test was conducted in which a group of young children receiving topical applications of distilled water each six months and who used a non-fluoride dentifrice daily were compared with another group receiving a single application of stannous fluoride each six months and who in addition used a commercially available stannous fluoride dentifrice daily. The results at each six month re-examination period indicated the significant reduction offered by the combined procedures. When the data were analyzed in terms of the frequency of total new carious surfaces in the control and stannous fluoride groups, it was shown that the most new surfaces decayed in any treated child during the entire three-year study was 14, while in the control group it was 50. Similarly, evidence was presented which showed that the size of the carious lesions in the stannous fluoride groups failed to increase as rapidly as those in the control group. Such findings as these strongly suggest that the use of "Multiple Principles of Preventive Dentistry" are not only practical to use, but highly effective.

USE OF PREMEDICATION IN DENTAL TREATMENT FOR MENTALLY RETARDED AND HANDICAPPED PATIENTS

J. B. Kennedy, Jr. J. Oral. Surg., Anes. & Hosp. D. Serv. 19:376, September 1961.

For purposes of premedication, the author groups mentally retarded and handicapped patients as follows:

Group 1 — Nervous patients who are high-strung, noisy, obviously or easily upset but not too resistive. Sedation usually is achieved with oral sodium secobarbital.

Group 2 — Disturbed and resistive patients with a higher level of intelligence. The sedation used is: (a) chlorpromazine administered intramuscularly; (b) promethazine administered intramuscularly; or (c) other tranquillizing agents which may have equal or better qualities. Good results have been reported with hydroxyzine hydrochloride which may be very useful in out-patient treatment because it leaves the patient mentally more alert.

Group 3 — Disturbed and resistive patients with a lower level of intelligence. The sedation used is one of the following combinations: (a) chlorpromazine plus meperidine hydrochloride, both administered intramuscularly; (b) promethazine plus meperidine, both administered intramuscularly; or (c) promethazine plus meperidine plus hyoscine, all administered intramuscularly.

Group 4 — Very stubborn and resistive patients who are older and larger in size (very difficult to handle). Some of these patients will respond to the medications already mentioned and therefore usually receive less medication to start with.

Group 5 — Physically handicapped children, such as those with cerebral palsy, who may have spasticity, athetosis, rigidity, tremor and atonia. These patients require very little or no premedication. Occasionally, a sedative such as oral sodium secobarbital is used for their own benefit, as they so often try too hard to help. An understanding approach, gentle and calm

work habits, and some support to protect the patient in a strange environment and from his own involuntary movements during the procedures are successful.

Group 6 — This group includes those with special problems, and each case is considered individually. An example is a mentally retarded deaf child who may be impossible to treat with safe dosages of premedication below the level of general anaesthesia.

The principal actions in dental premedication of the drugs mentioned here are:

1. Barbiturates — hypnotic, sleep-inducing calming effect.

2. Meperidine — analgesic, hypnotic. Raises the pain threshold and therefore protects the hypnotic effect of barbiturates or tranquillizing drugs.

3. Hyoscine — hypnotic, antisialogogue. Enhances the hypnotic effect of most other drugs and protects this state by raising the pain threshold. A dry mouth is helpful for dental treatment and to the premedicated patient. Hyoscine is also said to have an amnesic effect.

4. Promethazine — reduces apprehension. It is a relaxant and a hypnotic and inhibits nausea.

5. Chlorpromazine — makes the patient more tractable and produces less desire to resist. The patient follows suggestions without being able to resist.

When the barbiturates are used alone on the hyperactive child, rather large doses are required to induce hypnotic effects. The start of treatment acts as a stimulus which revives the patient, who is then in a more excitable state than before. This factor is recognized by many who have had experience with treatment for the handicapped or mentally retarded child. The hypnotic effect of barbiturates can be resisted under certain conditions, namely, dental treatment, for several hours and then may have a sudden or cumulative effect. Although the patient appears to be fully awake and responsive when he leaves the dental office, he could collapse later. Patients must have care and observation until the effects of the medication have disappeared completely.

The narcotic meperidine, being principally an analgesic, enhances the hypnotic effect of other drugs and raises the pain threshold to protect this hypnotic state. Although local anaesthesia almost completely eliminates pain, the injection of the anaesthetic, itself, is feared by some patients. Therefore, meperidine in its analgesic action aids in reducing all pain experience to the minimum.

FORTY YEARS OF HIGHER STOMATOLOGICAL EDUCATION IN THE U.S.S.R.

I. M. Starobinsky (translated by A. J. Thexton, B.D.S.). Brit. D. J. 111:73, August 1, 1961.

Higher stomatological education in the U.S.S.R. is confined to medico-stomatological institutes and to the stomatological faculties of medical institutes, this form of education having been introduced in the Soviet Union in 1935.

The present-day five-year course in the stomatological institute (faculty) makes the training of a stomatological specialist with a complete medical education fully possible. The teaching plan and programs for the first two years are almost identical with that of the medical faculty. This is a basic principle observed in the training of students of all faculties (medical, paediatric, and public health) for, by unifying the teaching plan, one program of theoretical subjects is possible. The theoretical training of students of the stomatological faculties is similar to that of students in other faculties. Almost exactly the same amount of time is spent on the study of internal disease and general surgery. The basic clinical subjects, medicine and surgery, are given their proper emphasis and the teaching of the special stomatological subjects occupies six instead of four terms.

The system of training stomatologists in stomatological institutes (faculties) has fully justified itself and the necessity for an increase in the numbers of these spe-

cial training institutes is quite evident. At the present time in the U.S.S.R. there are already two stomatological institutes (Moscow and Kharkov) and twelve stomatological faculties of medical institutes (Kalinin, Kiev, Perm, Kazan, Irkutsk, Tblisi, Baku, Tashkent, Kaunas, Riga, Tartu and Omsk). The existence of stomatological faculties by no means alters the principle of training of stomatologists as the teaching plans of stomatological institutes and faculties are identical. However, the common ground in the training of students of all the faculties, including the stomatological faculty, during the first three courses facilitates the organization of teaching.

A considerable advance has been made in the field of literature for dental education, certain textbooks written for students of stomatological institutes having become popular with students of other faculties.

At the present time all the indications are that future education in the U.S.S.R. will proceed to a unified system of training of stomatological manpower. Therefore, the first task is a further increase in the number of special higher stomatological training institutes and students with, at the same time, a proportional decrease in the number of dental schools and their eventual extinction. A gradual abandonment of dental schools was decided upon at a meeting held by the College of the People's Commissariat for Health of the U.S.S.R. on March 15, 1956. This policy will call for increased effort from the larger stomatological teaching faculties. Careful attention will also be paid to "dental doctors" who wish to take higher medical education. Correspondence courses are being considered as a convenient form of instruction for this purpose and the Ministry of Health of the U.S.S.R. has already taken measures to organize correspondence sections in the medical institutes and faculties. Recently it has also been proposed that the institutes of postgraduate medical education organize periodic postgraduate courses for "dental doctors".

EDITORIALS

A Glimpse at Dentistry in the Soviet Union

Very few Canadian dentists have had an opportunity to learn anything about current dental practice in the Soviet Union. Consequently, the observations of an American dental mission which visited medical, scientific and cultural institutions in five Soviet cities in June of last year,¹ and a recent publication of the World Health Organization describing the general structure and organization of health services in the U.S.S.R.² provide us with an interesting perspective on dentistry in this nation of 240 million people speaking sixty-five different official languages.

Health services in the Soviet Union are organized to meet the requirements of a specific social system and philosophy. There is complete integration of preventive and curative services and these are designed to provide free and comprehensive care for the whole population. This, of course, is only possible because of the State character of Soviet health services, and although private practice is not prohibited, it is so restricted that it exercises no influence whatever on the general set-up of health services in the country. Direction, planning and supervision are vested in the central Ministry of Health of the U.S.S.R. and in the separate Ministries of Health of the fifteen republics. It is of interest that dental and medical education is not a concern of the universities

but is vested in institutions controlled by the central and constituent ministries of health. The Soviet system of education in the health professions presents some specific features and to understand these fully it is necessary to understand the objectives of the whole health service and its organization.

The Soviet concept of health has resulted in a division of medical services which appears to be unique. There are three main medical fields in the U.S.S.R.: (1) adult medicine, (2) paediatrics and (3) hygiene and sanitation. A medical student must choose at the beginning of the third year of his six-year course whether he or she wants to become a "therapist" (dealing with adults), a "paediatrician" or a "physician-hygienist." This system is rather puzzling at first glance in a country where integration of preventive and curative services is the very basis of public health organization. In spite of this differentiation, however, all three groups of medical students actually acquire the same basic medical training which enables them to practise in any of the fields of general medicine.

In addition to orthodox physicians, there are four categories of paramedical personnel in the health services of the U.S.S.R. They are nurses, feldschers, midwives and technical personnel.

Dental services are provided by 19,000 stomatologists and 26,000 dentists. About 77 per cent of the stomatologists and dentists are women. There is one practitioner for approximately 5,322 people. The difference between a stomatologist and a dentist is in their education. A stomatologist trains for five years in a stomatological institute or a stomatological faculty of a medical institute. The first two and a half years of the stomatologist's course consist of the same basic theoretical training a medical student receives. A dentist, on the other hand, has three years of training and is equipped to place restorations, extract teeth, perform gingivectomies and do emergency work on fractures but no further surgery. Thus the status of the dentist would appear to correspond to that of other paramedical personnel. Tuition and books are provided free and students receive a small monthly stipend subject to satisfactory academic progress. On graduation, students take a State examination and are assigned to a clinic to practice. Private practice is permitted — there are about 500 private dental practitioners — but there is little incentive because of tax problems and loss of social security benefits. Both types of practitioners usually work five and a half days (34 hours) a week and have paid vacations of twenty-four working days. They have work norms of fourteen visits a day for adults and ten for children. Men are eligible for retirement at sixty years and women at 55.

The salaries of the two types of dental practitioners differ. The dentist earns 55 roubles a month with automatic five-year increases to 60 and subsequently to 75 roubles. The stomatologist earns 72.50 roubles a month with automatic five-year increases to 80 and subsequently to 108 roubles. Translated into purchasing power, the price of a loaf of bread is roughly equivalent to 35 minutes work, the price of a dozen eggs corresponds to two hours work and the cost of a small automobile represents about two years of work.

There are now twenty-six stomatological institutes and 53 dental schools in the

Soviet Union. They graduate 3,600 and 2,500 practitioners respectively, each year. Since 1956 there has been a gradual trend toward the replacement of dentists by stomatologists. It is envisaged that all dental services will ultimately be provided by stomatologists.

According to the American observers, the standard of dental care appeared to be inferior to that in the United States. The visitors commented on the excessive use of round burs for cavity preparation and a lack of hand-cutting instruments. Cement fillings were widely used. Matrices were apparently not used. Radiographs were sparingly used. There was considerable evidence of endodontic treatment. The procedures followed, however, seemed relatively primitive as there was no evidence of culturing of root canals and major dependence was placed on the use of antibiotics. One observer expressed himself critically with regard to aseptic technique.

Interestingly enough, paedodontics was emphasized and many clinics were said to be entirely devoted to this aspect of dentistry.

The equipment seen by members of the American mission was said to be good and quite modern. Much of it was manufactured in Czechoslovakia, though some good Russian equipment is now being gradually introduced.

Noteworthy also were the rather limited facilities and equipment for research. The number of well-qualified investigators appeared to be few and the opportunities meagre. Private conversation, however, revealed an intention to devote considerably greater emphasis to research in future.

It is naturally impossible to evaluate the complex mechanism of such a very large service on the basis of scattered reports and impressions. This cursory review might suggest that Soviet health workers are highly skilled, impersonal technicians trained to keep the human mechanism functioning; that the emphasis in dentistry is on service rather than on learning the causes of oral disease and

methods for their prevention; and that Soviet dentistry is inferior to its North American counterpart. Such conclusions however could be quite misleading. It must be remembered that during the second world war the Soviet Union suffered devastation on a scale totally unknown in North America, and that reconstruction has consumed a considerable part of the energies of the nation during the post-war period. In this context it is not surprising that the development of dentistry has proceeded more slowly than in North

America. Nor should it be forgotten that a nation which has demonstrated its technical and scientific capabilities in other fields, most notably in space exploration, is quite capable of equalling North American achievements in dentistry.

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Requirements and Values of the Modern Hospital Dental Service

The acceptance of hospitals as centres of total health care grows greater every day. The dental profession believes that the health care it renders is an essential part of a total health program. Yet very few Canadian hospitals have formally organized dental services available for the patients whom they serve. Thus it can be claimed that Canadian hospitals, generally, do not give totality of service.

Only a very small percentage of Canadian hospitals have dental services, less have dental internships and only two hospitals are known to provide graduate training in the specialty of oral surgery. Even more lamentable is the fact that in the few institutions which provide dental services, the state of true inter-professional acceptance leaves much to be desired. This is especially true as far as the well-trained oral surgeon is concerned. The better trained and qualified he happens to be, the more discriminatory resistance he meets from some physicians in parasurgical specialties.

The dental profession is therefore faced with the task of developing new dental services in most hospitals and with the challenge of gaining professional acceptance within the health family that operates within the confines of hospitals.

We must admit that organized dentistry in the past has not educated or trained its members sufficiently to assume their role and responsibility in the hospital framework, concentrating its efforts instead on individual office practice service. Fortunately, however, a few enlightened and far-sighted persons on the administrative level of the Canadian Dental Association, the provincial dental licensing bodies and our dental schools have realized that the situation must be remedied if dentistry is to achieve its professional responsibility and contribute its full potential as a health service in the total health program of the nation. Concrete evidence of this recognition is reflected in the terms of reference of three Canadian Dental Association agencies — the Council on Educa-

tion, the Council on Public Health and the Hospital Services Committee — which relate to the ideal development of dental services in hospitals.

Dentistry has developed its own body of knowledge and skills, its own application of the biological sciences to the understanding of the nature of dental disease, and a tremendous competence in restoration and maintenance of good functional dental occlusion and oral health. Functional occlusion is more than the harmonious, static arrangement of the teeth. It is the inter-relationship of all of the component parts of the masticatory system in motion during speech, swallowing, mastication, etc. It involves the teeth and their supporting tissues, the bones of the jaws, the temporomandibular joints and the supporting and specialized tissues of the masticatory system. In all these areas dentistry has exhibited its knowledge and competence and has established itself as a basic health service in the health program of the nation. No other health profession is as well equipped to organize, administer and provide this phase of health service.

The dental profession must not, therefore, be hampered or hindered in any way that will interfere with the development of its potential to the fullest. It must not be encumbered by archaic and unreasonably restrictive regulatory provisions. It must not be put under the control of any other profession. Dentists want the right to admit to hospitals patients with diseases of the oral cavity and associated structures. They want to be able to treat these patients as the law provides, according to prevailing provincial dental acts. Some of these patients will undoubtedly exhibit medical complications and, to that extent, medical co-operation is appreciated. To put the responsibility for the admission of a dental patient on a physician, however, who is neither equipped nor trained to make this decision, is illogical and unnecessary. Once a dentist is appointed to the staff of a hospital, he should be able to fulfill his professional role and

assume the maximum possible oversight and responsibility for his own services.

A dental department, staffed with adequately trained personnel, must have the same complete autonomy within the hospital setting that dentistry enjoys in private office practice, in the university, and in the armed forces. It must be accepted on an equal basis with other health services, and integrated with these for the sake of the patients' best interest.

In smaller hospitals, where oral surgery is the principal dental activity, this service may be organized as a section of the department of surgery, co-equal with other surgical specialties. The dental service should be directly responsible to the chief of surgery and not to the chief of any other surgical sub-section. In larger hospitals, the dental service should be organized and should function as a department and it should establish sections in conformity with recognized dental practice and specialties.

Hospital practice, under existing provincial legislation, is a privilege and not a right. Dentists must recognize and sense the need for such privileges. To accomplish this objective, the profession must provide hospital training for its members both at the undergraduate and graduate levels. A formal course in hospital procedure must be established in dental schools and offered in the undergraduate curriculum. The facilities of our teaching hospitals must be placed at the disposal of our dental faculties. Internships in general dental practice and in the specialties must be established in hospitals, especially in the teaching hospitals. The specialty of oral surgery cannot be developed if it is going to be denied hospital facilities and material for training.

Again, and just as important, there must be definite by-laws and regulations governing the dental service and the dental staff of hospitals. Dental staff members must be very meticulously and carefully chosen and special privileges given only to those that truly deserve them by virtue of their training, qualifications and accomplishments. To this end, the Hospital

Services Committee of the Canadian Dental Association has already developed appropriate *Model By-Laws for Public Hospital Dental Service*,¹ *Policies and Regulations Governing Hospital Dental Services*,² and *Rules and Regulations Controlling Dental Staff Privileges in Hospitals*.³ Any hospital that intends to establish a dental service or a dental department might well be guided by these statements.

The profession must also have a yardstick to determine the extent of privileges accorded to every dental staff member. We must control our activities so that no dental staff member will ever be able to abuse his privileges and do anything that is beyond his qualifications or competence.

The dental profession must further establish a really effective relationship with the Canadian Council on Hospital Accreditation, the Canadian Hospital Association and the Canadian Medical Association. Dentistry will truly contribute to a higher standard of health care in this nation when such a relationship materializes.

A.A.A.

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BUREAUX, COMMITTEES AND COUNCILS

Fluoridation in Canada, 1962

Bureau of Economic Research

In January 1962, 8.4 per cent of Canada's population was living in communities with controlled fluoridation. This represents 1,535,000 people living in 87 cities, towns and villages. Twenty-five more communities are fluoridating their water supplies now than at the same time last year. Fourteen of these 25 are in Saskatchewan, six in Quebec, three in Ontario and two in the Yukon and Northwest Territories.

A total of 37 plebiscites was held during 1961. Of these only 15 were successful, five out of 16 in Ontario, seven out of 13 in Alberta, one out of six in British Columbia and one out of one in Saskatchewan and the Northwest Territories.

The co-operation of the provincial dental directors in providing this information is gratefully acknowledged.

TABLE 1 Municipalities with controlled fluoridation, January, 1962.

Province	Community	Date started	Population affected	Total provincial population affected
Newfoundland				
Prince Edward Island				
Nova Scotia				169,500
	Dartmouth	1956	45,000	
	Halifax	1956	115,000	
	Kentville	1956	6,500	
	Wolfville	1959	3,000	
New Brunswick				
Quebec				166,400
	Acton Vale	1960	4,000	
	Beaconsfield		9,500	
	Berthierville	1960	3,300	
	Candiac		1,100	
	Chomedey		29,300	
	Delson		2,200	
	Dorval	1956	16,600	
	Duvernay	1958	8,000	
	Joliette	1957	18,300	
	Joliette Sud		1,000	
	Laval des Rapides	1958	18,300	
	Notre Dame des Prairies		1,500	
	Pointe Claire	1955	21,300	
	Pont Viau	1958	15,500	
	Rock Island	1958	1,800	
	St. Catherine d'Alexandrie		1,800	
	St. Constant		3,900	
	St. Vincent de Paul	1958	7,800	
	Stanstead Plain		1,200	
Ontario				354,300
	Brantford	1945	59,900	
	Brockville	1956	16,600	
	Burlington	1961	42,500	
	Deep River	1952	4,800	
	Fort Erie	1952	8,900	
	Oshawa	1953	60,100	
	Port Credit	1961	6,500	
	Sudbury	1952	76,800	
	Thorold	1952	9,500	
	Tisdale	1955	8,700	
	Toronto Township	1961	60,000	
Manitoba				531,100
	Boissevain	1957	1,200	
	Brandon	1955	28,200	
	Dauphin	1960	7,400	
	Killarney	1960	1,700	
	Minnedosa	1960	2,200	
	Portage la Prairie	1958	12,400	
	Steinbach	1960	3,600	
	Winnipeg	1956	474,400	

TABLE 1 cont'd.

Province	Community	Date started	Population affected	Total provincial population affected
Saskatchewan				214,700
	Assiniboia	1953	2,400	
	Blaine Lake	1961	600	
	Cabri	1961	700	
	Canora	1961	2,100	
	Carrot River	1961	900	
	Chaplin	1961	500	
	Davidson	1961	900	
	Estevan	1961	7,700	
	Eston	1957	1,600	
	Kamsack	1959	2,900	
	Kindersley	1959	2,900	
	Leader	1961	1,200	
	Luseland	1961	700	
	Melville	1960	5,200	
	Montmartre	1960	500	
	Moose Jaw	1952	33,200	
	Naicam	1961	700	
	Preeceville	1961	900	
	Prince Albert	1960	24,200	
	Rosthern	1960	1,300	
	Saskatoon	1955	95,500	
	Star City	1961	500	
	Swift Current	1954	12,200	
	Tisdale	1960	2,400	
	Wadena	1961	1,300	
	Watson	1961	900	
	Weyburn	1955	9,100	
	Wynyard	1956	1,700	
Alberta				33,100
	Devon	1959	1,400	
	Fairview	1958	1,500	
	Grande Prairie	1959	8,400	
	Innisfail	1960	2,200	
	Red Deer	1958	19,600	
British Columbia				56,300
	Burns Lake	1960	1,000	
	Campbell River	1960	3,500	
	Kelowna	1956	13,200	
	Kitimat	1958	7,900	
	Lake Cowichan	1960	2,100	
	Mesachie Lake	1958	300	
	Prince George	1955	13,900	
	Prince Rupert	1957	12,000	
	Smithers	1955	2,400	
Northwest Territories				4,900
	Fort Smith	1961	1,700	
	Yellowknife	1959	3,200	
Yukon				5,000
	Whitehorse	1961	5,000	
CANADA	Total population affected			1,535,300

TABLE 2 Per cent of total population in municipalities with controlled fluoridation, by provinces, 1962.

Province	Per cent
Newfoundland	0.0
Prince Edward Island	0.0
Nova Scotia	23.0
New Brunswick	0.0
Quebec	3.2
Ontario	5.7
Manitoba	57.6
Saskatchewan	23.2
Alberta	2.5
British Columbia	3.5
Northwest Territories	21.3
Yukon	34.2
Canada	8.4

TABLE 3 Per cent of total population in municipalities with controlled fluoridation, 1956 - 1962.

Year	Per cent
1956	2.1
1957	5.8
1958	5.9
1959	6.1
1960	6.0
1961	7.4
1962	8.4

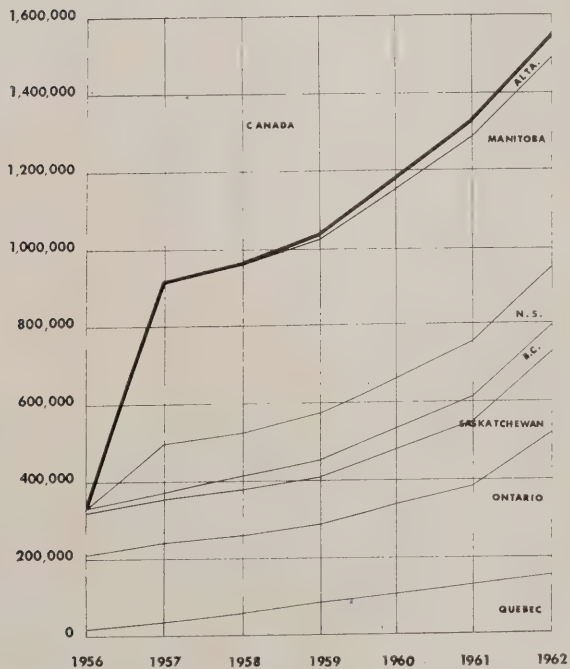


FIGURE 1 Progress of fluoridation. Population in fluoridated communities.

TABLE 4 Plebiscites held during 1961.

Province	Community	Votes cast		Decision
		For	Against	
Newfoundland				
Prince Edward Island				
Nova Scotia				
New Brunswick				
Quebec				
Ontario	Atikokan	1,018	320	Yes
	Cochrane	158	298	No
	Fort William	3,215	8,806	No
	Kapuskasing	754	1,355	No
	King	148	305	No
	Oakville	4,132	3,518	Yes
	Pembroke	1,349	2,923	No
	Port Arthur	5,393	6,235	No
	Port Hope	721	1,977	No
	Renfrew	1,434	1,342	Yes
	Stouffville	432	715	No
	Streetsville	948	427	Yes
	Tecumseh	252	399	No
	Trenton	895	1,052	No
	Wawa	333	609	No
	Whitby	874	784	Yes
Manitoba				
Saskatchewan	Uranium City	NA	NA	Yes
Alberta	Athabasca	80%	20%	Yes
	Bonnyville	NA	NA	Yes
	Brooks	52%	48%	No
	Calgary	30,373	30,499	No
	Coaldale	67%	33%	Yes
	Edmonton	35,508	22,107	No
	Fort Saskatchewan	371	176	Yes
	Leduc	354	113	Yes
	Ralston	215	43	Yes
	St. Albert	75%	25%	Yes
	St. Paul	NA	NA	Void
	Taber	265	235	No
	Westlock	103	106	No
British Columbia	Dawson Creek	653	873	No
	Kamloops	1,215	776	Yes
	Langley	218	291	No
	North Kamloops	792	577	No
	Powell River	1,098	1,497	No
	Summerland	436	562	No
Northwest Territories	Hay River	394	28	Yes

DENTISTRY IN THE NEWS

The Association

C.D.A. CONVENTION ATTRACTS 1,700

The 61st annual meeting of the Canadian Dental Association goes into the record books as the second largest in attendance figures. Officially registered were 911 dentists, 571 dentists' wives, 11 dental hygienists and 150 dental assistants, with exhibitors and participants bringing the total to well over 1,700. (About 2,000 attended the C.D.A. meeting in Montreal in 1958.) The convention, held in conjunction with the 46th convention of the British Columbia Dental Association, was held June 3-6 in the Queen Elizabeth Theatre at Vancouver.

The Board of Governors of the Canadian Dental Association met in the Hotel Vancouver, May 30-June 2. In addition to Board members, committee chairman and staff, and over 40 dentists from across Canada attended sessions of the Board. Two sessions of the Executive Council were held, one immediately preceding the Board meeting and one the day following it.

From the opening event of the convention, the Sunday evening musicale and art exhibit, to the closing dinner dance, conven-

tion delegates were kept busy with a wide array of lectures, clinics, exhibits and social events. Split second timing and careful attention to every detail by members of the Convention Committee, under the direction of the chairman, L. F. Marshall, produced this very successful convention.

C.D.A. STAFF DENTAL PLAN APPROVED

At its recent meeting in Vancouver, the Board of Governors unanimously approved establishment of a dental care plan for employees of the Association. The first of its type in Canada, the new dental plan has been established on an experimental basis to gain experience in administration.

The plan covers full-time employees of the Association, their wives, and the children of male employees. Each person covered by the plan is entitled to one examination, including radiographs if necessary, and one prophylaxis per year. No deductible amount applies to this phase. Excluding the free annual examination, the first \$25 of treatment cost is the responsibility of the covered person. In the second year of participation in the plan, and in every year thereafter, the deductible amount is \$10. Additional deductibles apply for orthodontic treatment and pros-



A scene from the President's Ball on the occasion of the Canadian Dental Association's annual meeting at Vancouver. Seated at the head table are, left to right, W. P. Munsie, president of the College of Dental Surgeons of British Columbia; Mrs. J. C. Lewis, wife of the immediate past president of the British Columbia Dental Association; and William Miller, immediate past president of the Canadian Dental Association.

thetic services. Maximum benefits are \$200 for an individual or \$500 for a family for the first year. The plan covers 80 percent of the reasonable expenses of the treatment of any dental disease, defect, or injury recommended by a dentist, after the deductible amount is satisfied. Persons covered by the plan are free to seek treatment from any dentist of their choice.

Not covered under the plan are cosmetic dentistry, losses as a result of war, disease, defects or injuries resulting from occupation or employment and any services covered under other insurance or government plans. In its initial stages, the plan is being operated by the Bureau of Economic Research. It is anticipated that the plan will be evaluated annually with a view toward establishing premiums based on experience.

C.D.A. REITERATES FLUORIDATION APPROVAL

On recommendation of its Council on Research, the Canadian Dental Association has reiterated its approval of fluoridation of water supplies.

In its annual report to the Board of Governors, the Council on Research stated that fluoridation is safe, economical, and effective in reducing tooth decay by about two-thirds. The Association first approved fluoridation in 1953 and has reiterated its stand annually since then. The resolution approved at the 1962 annual meeting was as follows:

Whereas tooth decay, by affecting the vast majority of people in Canada, has come to be recognized as one of the major public health problems of our time, and

Whereas studies covering a period of over thirty years under the widest variety of controlled conditions have marked fluoridation as one of the most widely studied of public health procedures, and

Whereas such studies reveal that fluoride in the recommended amount of one part of fluoride to one million parts of water causes no ill-effect and is effective in reducing tooth decay by approximately two-thirds, and

Whereas fluoridation benefits children and the benefits extend into adult life, therefore be it

Resolved that the Canadian Dental Association reiterates its recommendation to the people of Canada that communities having a public water supply adopt a procedure for adjusting the fluoride content of their water supply to a level considered optimum for the maximum prevention of dental decay, and for this purpose seek competent dental, medical and engineering advice.

SUMMER RESEARCH GRANTS TOTAL \$7,000

The Council on Research of the Canadian Dental Association has announced grants totalling \$7,000 to dental students for summer research work in university laboratories. The ten grants made for the summer of 1962 were awarded to undergraduate students at dental schools of Dalhousie University, McGill University, Université de Montréal, University of Toronto and the University of Manitoba.

The aim of the summer studentship program of the Council on Research is to give dental students research experience in order that they might develop into teachers and research workers badly needed in dentistry. Since the undergraduate summer studentship was launched in 1955, more than \$36,000 has been allocated to this effort. In addition, over \$50,000 has been allocated to the graduate fellowship program of the Council.

Canada and the Provinces

NINE CANADIAN DENTISTS INDUCTED INTO INTERNATIONAL COLLEGE OF DENTISTS

Nine Canadian Dentists were inducted into fellowship of the International College of Dentists, Canadian section, at Vancouver, June 2-3. They are: Yves Dufresne of Trois Rivières, P. Quebec; A. D. Leask of Moose Jaw, Saskatchewan; C. M. Whitworth, L. F. Marshall and C. R. Hallman of Vancouver, British Columbia; M. A. Rogers and H. T. Oliver of Montreal, P. Quebec; C. W. B. McPhail of Edmonton, Alberta; and G. C. Swann of Calgary, Alberta.

L. M. Grose of Toronto was elected president of the Canadian section. Other officers elected were H. R. McLean of Edmonton, president-elect; J. G. Ratté of Quebec City, vice-president; Arthur Poyntz of Victoria, past-president; E. A. White of Toronto, treasurer; and D. G. Tanner of Toronto, registrar.

Named as regents were: T. H. Johns, district 1; W. M. Blair, district 2; M. J. MacDonnell, district 3; W. J. Riley, district 4; P. G. Anderson, district 5; C. M. Purcell, deputy regent, district 5; W. F. Walford, dis-



Atlas

Inducted as members of the Canadian section, International College of Dentists at a recent meeting in Vancouver were: Yves Dufresne, Trois Rivières; H. T. Oliver, Montreal; A. D. Leask, Moose Jaw; C. W. B. McPhail, Edmonton; C. M. Whitworth, Vancouver; L. F. Marshall, Vancouver; M. A. Rogers, Montreal; G. C. Swann, Calgary; and C. R. Hallman, Vancouver.

district 6; Armand Fortier, deputy regent, district 6; and G. M. Dewis, District 7. C. L. Strachan of London, Ontario was reappointed editor.

Officers elected for the coming year are: Allan Daysmith, president; E. N. Screech, president-elect; J. H. Moreau, secretary; and D. O. Braden, treasurer. H. R. Turner, D. S. Phillips and J. M. Plecash were named directors.

BRITISH COLUMBIA

British Columbia Dental Association.—Members of the new executive are: M. J. T. Dohan of Victoria, president; O. F. Wright of Vancouver, president-elect; J. C. Lewis of Vancouver, past-president; Sheppard Margolese of Vancouver, treasurer; and K. E. Leslie of Victoria, secretary. Named as directors were S. S. Banford of New Westminster, W. W. McLuhan of Victoria, D. E. Waller of Prince George, D. J. Yeo of Vancouver, K. W. McCann of North Surrey, C. W. Gardner of Vancouver, J. E. Reid of North Vancouver, H. G. Pettapiece of Parksville, W. H. Letham of Salmon Arm, and H. G. Steed of Nelson.

Victoria and District Dental Society. — An English dentist, John Bunyan, was the guest lecturer at the April meeting of the society held in conjunction with the Upper Island Dental Society.



A. A. Antoni of Toronto, the newly elected president of the Canadian Society of Oral Surgeons, is congratulated on his assumption of office by F. A. Smith of Vancouver, the retiring president. The event took place during the course of the Canadian Dental Association's annual meeting at Vancouver.



Elwood Cox, a prominent British Columbia dentist, received a certificate of membership in the 75-50-25 Club (75 years of age, 50 years in practice, 25 years' practice in British Columbia) from J. C. Lewis, immediate past president of the British Columbia Dental Association on the occasion of the Canadian Dental Association's annual meeting at Vancouver.

College of Dental Surgeons of British Columbia. — The College of Dental Surgeons of British Columbia, in co-operation with the Vancouver Board of School Trustees, will present an 88-hour evening course for dental assistants, two nights each week, from October to the end of April 1963. Lectures on general office and patient routine, operative dentistry, dental radiology, oral surgery, silver amalgam and crown and bridge procedures will be offered as part of the curriculum. Practical experience at the chairside will also be included. The course will conclude with written examinations and certificates will be awarded to successful candidates.

NOVA SCOTIA

Atlantic Provinces Orthodontic Study Club. — The fifth meeting of the club was held June 21-22 in conjunction with the Atlantic Provinces Dental Convention at the Digby Pines Hotel, Nova Scotia. Claude Baril, assistant professor in the Department of Orthodontics at the Université de Montréal addressed club members on the subject, "Removable Tissue-Borne Anchorage Appliances," and "Treatment of Class II, Division 1 Malocclusions, Involving Extraction of Second Molars." He also addressed a general session at the Atlantic Provinces Dental Convention, speaking on "Serial Extraction Procedures," and describing methods of assessment and management of serial extraction in the mixed dentition as a means of relieving crowded



Shown at a recent meeting of the Victoria and District Dental Society are W. G. Dempsey, the immediate past president (left) and the essayist, John Bunyan, a visitor from England.

arch conditions by the time full eruption has taken place.

At a subsequent business session, the chairman D. A. Eisner of Halifax, presented the formal constitution which was ratified by the members. The title of the organization was changed from the "Maritime Orthodontic Study Club" to the "Atlantic Provinces Orthodontic Study Club." W. O. Mulligan of Saint John, New Brunswick is serving as secretary.

ONTARIO

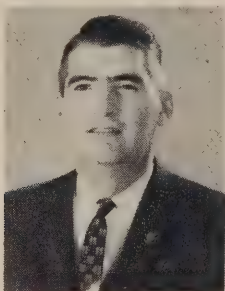
Ontario Dental Association. — More dentists attended the 95th annual convention of the Ontario Dental Association, May 13-16, than ever before in the entire history of the association. This fine achievement is a tangible endorsement of this year's convention program and new association policies formulated under the leadership of immediate past president E. A. White. The members of the association gave Dr. White a standing ovation at the convention luncheon on May 16 in recognition of his many years of service to the association.

L. E. Hastings of Fort William was installed as the new president of the Ontario Dental Association. Acting as installing officer was J. Kreutzer, professor of Preventive Dentistry at the University of Toronto's dental faculty and honorary president of the faculty's graduating class of 1950 of which Dr. Hastings is a member. Referring during the installation ceremony to the new presi-

dent's accomplishments and past services to the nation, to his community and to the dental profession, Dr. Kreutzer said: "the seed of purposeful living and leadership was sown in (him) long before I knew him as a dental student. . . . With a man of his background and philosophy of life as president, the association will be guided to even greater achievements, with knowledge, wisdom and dignity."

W. W. Philp of Toronto was named president-elect and S. H. Shepherd of Toronto became archivist-historian for the ensuing year.

Elected to the association's board of governors, in addition to officers whose terms have not yet expired, were: E. E. Johns of Kingston, district 1; W. J. Spence of Toronto, district 2; A. R. Kaukinen of Sudbury, district 5; and S. P. Smith of Port Arthur, district 6. D. L. Rife, R. O. Fisk and F. B. Burns are members of the Dental Public Health Committee. W. R. Jackson is a member of the Benevolence Committee.



L. E. Hastings

Dentistry for Children Group Meets in Hamilton.—The annual convention of the Ontario chapter of the Canadian Society of Dentistry for Children was held at the Sheraton-Connaught Hotel in Hamilton, May 12, under the sponsorship of the Hamilton Dental Association.

Essayists on the program included: Gordon Nikiforuk, professor of Preventive Dentistry and chairman of the Division of Dental Research at the University of Toronto, whose paper was entitled "The Determinants of Tooth Susceptibility to Dental Caries;" M. J. O'Brien, a medical staff member of the Hospital for Sick Children, who discussed "Drugs, their Uses and Abuses in Children;" William Blatz of the Department of Psychology, University of Toronto, who outlined why "Children Should Like the Dentist;" and J. G. Pedler, chairman of the Department of Pre-

ventive Dentistry, University of Toronto, who reviewed "Oral Diagnosis in Children." This full essay program was complemented by the luncheon address presented by Mr. Charles Linton, registrar of McMaster University, describing "Who Goes to University" and by a case presentation from Robert Rapp, a Toronto paedodontist, concerning "Hereditary Ectodermal Dysplasia."

Delegates were welcomed at the luncheon by Mayor Lloyd D. Jackson of Hamilton. The program closed with a delightful cocktail hour tendered by the Hamilton Dental Association.

The society elected the following members to office for the year terminating at the 1963 convention: C. D. Beierl of Islington, honorary president; T. E. Bibby of Burlington, president; Robert Rapp of Toronto, president-elect; Wm. J. Simpson of Niagara Falls, vice-president; and D. L. Rife of Toronto, secretary-treasurer.

Named as councillors were: L. E. Hastings of Fort William, D. L. Bigelow of Ottawa, R. H. Finlayson of Hamilton, F. B. Burns of Islington, B. M. Jackson of Kitchener, F. E. Dawe of St. Catharines, G. K. Clarke of Burlington, E. G. Sonley of Willowdale, H. M. Yule of Peterborough, A. V. Scrutton of London, D. B. Stephenson of Toronto, and R. L. Ellis of Preston.

The 1963 convention of the Ontario chapter will be held in the Royal York Hotel, Toronto, on Saturday, May 18, in conjunction with the joint convention of the Canadian Dental Association and the Ontario Dental Association.

Essex County Dental Association.—The association held its final general meeting of the 1961-62 season on May 24 when the following new executive was installed: D. L. Coppel, president; J. M. Fejes, vice-president; F. J. Furlong, treasurer; and A. W. Lampe, secretary.

Ottawa Dental Society.—The newly elected officers of the Ottawa Dental Society for the year 1962-63 are: M. Florence, president and J. A. Whyte, secretary.

Hamilton Dental Association.—Twenty-seven past presidents were present at the recent annual meeting of the Hamilton Dental Association when the members honoured the organization's former presidents. These dentists are all in active practice and have given a combined total of 819 years of dental service to the people of the city of Hamilton and surrounding districts. Those honoured, and



Twenty-seven past presidents were recently honoured by the Hamilton Dental Association. Shown standing from left to right are E. G. Dore, W. A. Banting, G. M. Morrow, H. J. Totton, D. E. Shultis, W. J. Hambly, C. T. Mason, W. J. McEween, E. C. Jackson, R. H. Finlayson, J. F. Kilgour, D. S. Moore, A. H. Leckie, W. Baxter, W. D. Clark, C. G. Stewart, and P. T. Smylski. Seated at the table from left to right are: H. C. Thompson, G. M. Philp, N. L. Robinson, C. T. Moyle, L. J. Easter, A. R. Poag, F. M. Serena, J. A. Cummer, A. J. Quick, and W. G. Foster.

the year of their presidency, are as follows: W. A. Banting, 1960; W. Baxter, 1945; W. D. Clark, 1932; J. A. Cummer, 1938; E. G. Dore, 1949; L. J. Easter, 1961; R. H. Finlayson, 1955; W. G. Foster, 1935; W. J. Hambly, 1954; E. C. Jackson, 1934; J. F. Kilgour, 1956; A. H. Leckie, 1946; C. T. Mason, 1939; W. J. McEween, 1929; D. S. Moore, 1952; C. T. Moyle, 1940; G. M. Philp, 1931; A. R. Poag, 1928; A. J. Quick, 1944; L. Robinson, 1953; F. M. Serena, 1943; D. E. Shultis, 1942; P. T. Smylski, 1958; C. G. Stewart, 1937; H. C. Thompson, 1950; and H. J. Totton, 1947.

International Items

FEDERATION DENTAIRE INTERNATIONALE

F.D.I. Meets in Sweden in 1963.—Stockholm the capital of Sweden, will be the site of the 51st annual session of the Fédération Dentaire Internationale, July 1-7, 1963. Thus the Federation returns to this city of waterways and bridges after an absence of 16 years.

The organizing committee, under the chairmanship of H. Berggren, is preparing a varied program including visits to places of interest, an opera performance and excursions. Encouraged by the success of the Congress Club at the Helsinki session in 1961, the organizing committee is making arrangements for a similar club to be housed at the

Hotel Apollonia, the home of the Swedish dental profession.

The broad outline of the program is as follows: Sunday, June 20: General Assembly A; Monday, July 1: Opening Ceremony and Scientific Program; Tuesday, July 2: Scientific Program and Performance at the Drottningholm Theatre; Wednesday, July 3: Scientific Program and Banquet in the Stockholm City Hall; Thursday, July 4: All-Day Tour of Stockholm's archipelago; Friday, July 5: Scientific Program; and Saturday, July 6: General Assembly B.

Proposed themes for the scientific program are: Biological Aspects of Prosthetic Dentistry; Oral Health of the Aged; and Microbiology of Periodontal Disease.

The scientific program and business meetings will be held in the recently completed A.B.S. Building in the heart of Stockholm. Fine lecture halls, spacious exhibition rooms, a restaurant, a café, and all the amenities which contribute to an enjoyable meeting are to be found in this building. Simultaneous translation will be provided in English, French and German. After the meeting there will be an organized air tour of the ancient city of Visby on the Isle of Gotland in the Baltic Sea. Visby is an ancient cultural centre, with many interesting historical monuments dating from the middle ages, as well as a delightful holiday centre. Also planned is a night tour by air to Lapland—the land of the midnight sun—north of the Arctic Circle.

NETHERLANDS

Fluoridation Forges Ahead. — Nearly thirty per cent of the Netherlands' 11½ million

population will be receiving fluoridated drinking water in the very near future, according to recent information from the Netherlands Dental Association. The island of Goeree-Overflakkee with 33,000 inhabitants in the southwestern part of the country was the first to introduce fluoridation on January 19, 1962. On May 10 of this year Rotterdam city council approved fluoridation of the drinking water for the city's approximately one million inhabitants. In central Holland the province of Gelderland will begin fluoridating the drinking water for its approximately 1¼ million inhabitants early next year. In another large city, Amsterdam, the city council voted on June 13 in favour of fluoridation. Friesland, a northern province declared itself against fluoridation. This unfavourable decision is believed due to strong opposition on the part of the director of the province's drinking water supply company.

UNITED STATES

Issue Information on "Association of American Dentists".—The American Dental Association has issued information about a new "national" dental organization which has been formed and which is now actively soliciting members of the American Dental Association for membership and financial support. The new group is not, in any way, connected with or recognized or approved by the American Dental Association.

The "Association of American Dentists", as the new group is called, has stated that its purposes and structure will be basically the same as those of the American Association of Physicians and Surgeons. This is a group which among other things, has come out strongly against fluoridation of water supplies.

Gold Foil Operators Plan Meetings. — This year's annual meeting of the American Academy of Gold Foil Operators will be held October 26 at the University of Alabama School of Dentistry, Birmingham, Alabama. A further interim meeting is scheduled for February 1, 1963 at the Indiana University School of Dentistry, Indianapolis, Indiana. Further information may be obtained from the Executive Secretary, Mrs. Vonne Wolf, P.O. Box 266, Coronado, California, U.S.A.

Anaesthesiologists Schedule Seminar. — The Sixth Postgraduate Seminar, sponsored by the New York State Dental Society of

Anaesthesiology in conjunction with the College of Dentistry of New York University, will be held November 8-9 at the College of Dentistry, 342 East 26th Street, New York City, U.S.A. "Pain and Its Control in Dental Practice" is the theme for this two-day seminar. Further information may be obtained from Dr. William Greenfield, Secretary, NYSDSA, 110 East 36th Street, New York 16, New York, U.S.A.

Canadian Dental Schools

J.-P. LUSSIER BECOMES DEAN OF MONTREAL DENTAL SCHOOL



J.-P. Lussier

Jac Guy

J.-P. Lussier, vice-dean and director of studies at the Faculty of Dental Surgery, Université de Montréal, was recently appointed dean of Canada's only French dental school. He succeeds Paul Geoffrion who, although having reached retirement age, will continue as head of the orthodontic department.

Dr. Lussier completed his classical studies at André Grasset College before proceeding to the Université de Montréal's dental school where he graduated in 1942. He subsequently received Bachelor's and Master's degrees in science from the Université de Montréal's Faculty of Sciences, specializing in physiology. Following a period at the School of Graduate Studies, University of California, where he obtained a Doctorate of Philosophy,

he returned to Montreal to take charge of the curriculum in the Faculty of Dental Surgery. There followed early promotion to assistant professor in the dental school, and later also to associate professor of Physiology in the Faculty of Medicine. Named vice-dean and director of studies in the Faculty of Dental Surgery in 1957, Dr. Lussier was appointed full professor in 1961.

A fellow of the American College of Dentists, Dr. Lussier is also chairman of the Council on Education of the Canadian Dental Association. He is also a member of the Associate Committee on Dental Research of the National Research Council of Canada.

ESSAY PRIZES TO TORONTO, MONTREAL GRADUATES

First prize of \$200 in the annual War Memorial Essay Competition has been awarded to P. M. Knutson, a 1962 dental graduate of the University of Toronto. Guy Maranda, Université de Montréal, has been awarded second prize of \$100. The title of the essays for this year's competition was "Early Diagnosis of Pre-cancerous Lesions."

The annual essay competition for final year dental students in Canada is administered by the War Memorial Awards Committee of the Canadian Dental Association. The prize money represents interest from a fund established by dentists as a memorial to colleagues who died in two world wars. Each dental school is invited to submit its two best essays to the committee for judging. The two winning essays are published in the *Journal of the Canadian Dental Association*.

UNIVERSITY OF MANITOBA

First Manitoba Dentists Graduate.—Chancellor Samuel Freedman formally admitted thirteen men and one woman to the degree of Doctor of Dental Medicine of the University of Manitoba on May 24. They were the first dentists to graduate from Canada's newest dental school.

The convocation was preceded by a lunch given by the Manitoba Dental Association to the graduates, their friends and families as well as the staff of the Faculty.

J. B. Macdonald, new president of the University of British Columbia, received an honorary Doctor of Laws degree and gave the convocation address.

DALHOUSIE UNIVERSITY

A. E. Hoffman, associate professor of Oral Surgery, and John Findlay, associate professor of Periodontics, have tendered their resignations from the Faculty of Dentistry, Dalhousie University effective September 1. Dean J. D. McLean has announced the appointment of R. G. Stephens to the Department of Periodontics.

UNIVERSITY OF TORONTO



Harry Sicher

Harold Keith Box Memorial Lecture.—Harry Sicher of Chicago will present the first annual Harold Keith Box Memorial Lecture at the Faculty of Dentistry, University of Toronto on October 15. His subject will be "The Role of Bone in Periodontal Disease." Dr. Sicher will review the nature of the bone supporting the teeth. He will also discuss the influences of systemic and local factors in creating variations in the bone of the alveolus. The purpose of the lecture will be to present the current knowledge concerning the processes which occur in the bone supporting the teeth in periodontal disease.

Dr. Sicher was born in Vienna, Austria, where he received a medical degree in 1913. He taught at the University of Vienna Medical School, first as an instructor in Anatomy, then in the Department of Dentistry, where he was appointed associate professor in 1933. Moving to Chicago, Dr. Sicher served as associate professor of Anatomy at the Chicago Medical School from 1939 until 1942, when he joined the faculty of the Loyola University School of Dentistry, where he was pro-

fessor of Anatomy and head of the department until 1960. He is now professor emeritus and director of the Teacher Training Program; guest lecturer at Northwestern University Graduate Dental School; special lecturer at the University of Nebraska Graduate Dental School; and visiting professor at the University of Puerto Rico Dental School.

A member of numerous learned societies, Dr. Sicher received an honorary Doctorate of Science degree from Loyola University, Chicago, in 1952. He is the author of *Oral Anatomy* and co-author of *Bone and Bones*.

Royal Canadian Dental Corps

BRIG. BAIRD HONOURED BY ORDER OF ST. JOHN OF JERUSALEM

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Armed Forces has received a parchment denoting a Privy Vote of Thanks by the Order of St. John of Jerusalem in 1962 in recognition of the Royal Canadian Dental Corps having over ninety per cent of all ranks qualified in the fundamentals of first aid or higher qualification. This accomplishment has made a significant contribution to the overall efficiency of the armed forces and has been of material value to the role of the R.C.D.C. in a national survival operation.

BRIG. BAIRD ON WESTERN TOUR

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces inspected No. 14 Dental Company, with headquarters in Winnipeg, in late May. Accompanied by Lt.-Col. R. B. Jackson, Commanding Officer of No. 14 Company, he visited clinics in the Winnipeg area. He then proceeded to Vancouver, where he attended both the meeting of the Board of Governors and the annual convention of the Canadian Dental Association. Following the convention he inspected the personnel and facilities of No

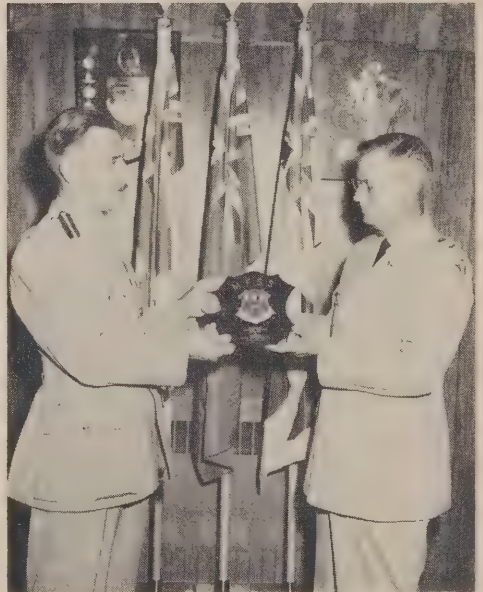
11 Dental Company at Vancouver, Victoria, Calgary and Edmonton. During this portion of the tour he was accompanied by the Commanding Officer of No. 11 Company, Colonel B. P. Kearney.

DISTINGUISHED U.S. ARMY DENTAL OFFICER VISITS ROYAL CANADIAN DENTAL CORPS SCHOOL

Col C. T. Budge, director of the Department of Dental Science at the Medical Field Service School of the U. S. Army visited the R.C.D.C. School in June.

An officer with a very distinguished professional and military career, Col. Budge is a nationally recognized oral surgeon and has held several key assignments in this specialty throughout the United States.

During his visit to the School, Col. Budge presented a replica of the Medical Field Service School plaque to the Commandant, Col. C. E. Purdy.



Colonel C. T. Budge, director of the Department of Dental Science at the Medical Field Service School of the U. S. Army, presented a replica of the Medical Field Service School plaque to Colonel C. E. Purdy, Commandant of the Royal Canadian Dental Corps School where Colonel Budge was a recent visitor. Col. Budge is shown at right.

Continuing the series of photographs of commanding officers of the Royal Canadian Dental Corps Militia units located across Canada, portrayed in this issue of the *Journal of the Canadian Dental Association* are Lt.-Col. G. N. Findlay, left, of No. 59 Dental Unit in Calgary and Lt.-Col. A. Mintz, right, of No. 58 Dental Unit in Regina.



DENTAL OFFICERS ATTEND C.D.A. CONVENTION

The following officers attended the annual convention of the Canadian Dental Association at Vancouver, June 3-6:

Brigadier K. M. Baird of the Directorate, Colonel B. P. Kearney of Edmonton, Lt.-Col. R. E. Brown of Esquimalt, Major D. H. Protheroe of the Directorate, Major W. H. Carter of Cold Lake, Major R. J. K. Pyne of Comox, Major M. P. Quinn of Vancouver, Captain J. O. Bowman of Sea Island, Captain D. G. Gardner of Esquimalt, Captain L. C. Gray of Vancouver, and Captain M. Petryk of Calgary.

During the convention, No. 61 Dental Unit R.C.D.C. (Militia) commanded by Lt.-Col. P. L. Rondeau held a cocktail party in the Queen Elizabeth Theatre, Vancouver.

POSTINGS, RELEASES

Major Kelland and Major Small Exchange Postings.—Major A. L. Kelland of Headquarters, Central Command, Oakville has been posted to the United Nations Emergency Force in the Middle East as Officer in Charge of the Canadian Dental Detachment. He replaces Major E. J. C. Small who returns to Oakville where he served for some time before proceeding overseas.

Senior Officers Posted.—The following lieutenant-colonels and majors have been recently posted:

Lt.-Col. R. E. Brown from H.M.C.S. Naden, Esquimalt to the R.C.D.C. School, Camp Borden.

Lt.-Col. S. G. Bagnall from the R.C.D.C. School, Camp Borden to the Directorate of Dental Services, Ottawa.

Lt.-Col. W. W. Anglin from Camp Petawawa to R.C.A.F. Station St. Jean.

Lt.-Col. G. MacDougall from the R.C.D.C. School, Camp Borden to H.M.C.S. Naden, Esquimalt.

Major J. C. Brick from the Directorate of Dental Services, Ottawa to R.C.A.F. Station Uplands.

Major D. H. Protheroe from the Directorate of Dental Services, Ottawa to the R.C.D.C. School, Camp Borden.

Major H. R. Kettys from Headquarters, Calgary Garrison to the Directorate of Dental Services, Ottawa.

Major S. W. Muller from R.C.A.F. Station Winnipeg to Headquarters, Northwest Highway System, Whitehorse.

Major P. S. Sills from R.C.A.F. Station Uplands to the R.C.D.C. School, Camp Borden.

Major J. W. Jolly from Fort Churchill to Headquarters, Calgary Garrison.

Major D. H. Skinner from No. 4 Field Dental Company, Germany to Camp Petawawa.

Major E. M. C. Franklin from No. 35 Field Dental Unit, France to R.C.A.F. Station Centralia.

Major I. W. Susser from R.C.A.F. Station Greenwood to No. 35 Field Dental Unit, France.

Major J. V. P. Chatwin from Canadian Forces Hospital, Kingston to No. 4 Field Dental Company, Germany.

Major W. K. Dickie from Headquarters, Northwest Highway System, Whitehorse to Canadian Forces Hospital, Kingston.

Major J. L. Craig from the R.C.D.C. School, Camp Borden to Air Force Headquarters Dental Clinic, Ottawa.

Major P. E. Fafard from R.C.A.F. Station Centralia to Fort Churchill.

Short Service Officers Enter Private Practice.—The following officers have taken their release from the Corps to enter civilian private practice: Captain A. P. Menzies, Captain H. F. MacKay, and Captain J. O. Bowman.

Public Health

J. E. HALLET APPOINTED TO HALIFAX HEALTH DEPARTMENT DENTAL DIVISION

J. E. Hallet of Halifax, Nova Scotia was recently appointed to the Halifax Department of Public Health Dental Division. A graduate of the Faculty of Dentistry, University of Toronto (1947), it is anticipated that Dr. Hallet will shortly undertake postgraduate training in dental public health in preparation for his official duties in Halifax. Dr. Hallet will subsequently develop a dental public health program for the city of Halifax.

DENTISTS PROMINENT IN PUBLIC HEALTH NEWS

A. E. Chegwin, dental director with the Saskatchewan Department of Public Health was presented an honorary life membership in the Saskatchewan branch of the Canadian Public Health Association at the recent annual meeting of the Saskatchewan branch held in Regina, April 24-25.

W. A. Zacherl, director of Dental Health Services for the city of Edmonton, was named

president of the Alberta Division, Canadian Public Health Association at the annual meeting of the Alberta Division held at Banff, April 25-27. C. A. W. White of Red Deer, Alberta was named chairman of the Dental Officers' section on the same occasion.

FLUORIDATION ROUNDUP

Fluoridation continues to be a leading news item in Canada as well as overseas. Here are some typical reports of recent date:

Federal government action on fluoridation was demanded by the Professional Institute of the Public Service of Canada in its brief to the Royal Commission on Health Services. Speaking for members of the professions employed in the federal civil service, the June issue of organization's publication, *Professional Public Service* quotes the following excerpt from their brief:

"We believe that the government should take a more active lead in placing all sides of the fluoridation issue before the public. This is particularly necessary since in many instances the electorate must decide the issue. Fluoridation has been the subject of so many charges and counter-charges that there is a real need for an authoritative statement by the federal authority to clarify the issues. If more research is needed on this subject then it should be undertaken immediately. The results of recent federal research should be made available quickly, in terms that can be readily understood by the electorate, and in publications that will reach them."

Health and Welfare Commissioner A. R. Morton of Halifax reported very good results after five years of fluoridation of the city's water supply. Tooth mortality among children who drank fluoridated water since infancy was cut by more than a half. The number of caries-free children has increased from 36 to 54 per cent. The number of DMF teeth per hundred children declined from 20 to 12. A total of 1,651 school children were examined before fluoridation began in 1956 and 1,954 were examined 5 years later.

Fluoridation made its debut in Cornwall, Ontario, on February 13 and, according to newspaper reports, there has been only favourable reaction from citizens. About 43,000 people are served by the Cornwall water system.

Since May 1, residents of North Bay and adjacent West Ferris and Widdifield townships have been drinking fluoridated water. The combined population is about 41,000.

Perth (5,700), Renfrew (8,461), the Kirkland Lake area (16,000) and Streetsville (4,850) are other Ontario communities which have recently instituted fluoridation. This

brings the total number of persons served by fluoridation in Ontario to 443,107.

St. Albert, Alberta, has been fluoridating since late in April, 1962. A plebiscite approved fluoridation by six to one several months ago.

Voters of Peace River, Alberta, recently voted 80 per cent favour fluoridation.

Chicago, the largest city in the world to have a fluoridated municipal water supply, won a significant victory on June 22. Ending a six-year legal battle, Chief Justice S. B. Epstein of the Superior Court of Cook County agreed with the recommendation of the Master in Chancery who filed a detailed report upholding the legality and constitutionality of the fluoridation procedure.

The city council at Tampa, Florida, has voted to fluoridate the water there.

Dr. H. Trendley Dean, 68, a research pi-

oneer in the effects of fluoridated water on dental health, died last month. His research, began in 1931 and won him numerous awards.

Officials of the Venezuelan state of Julia have ordered fluoridation of the Maracaibo water supply and eventually all state aqueducts.

A statement urging dentists to exercise aggressive leadership to combat the "anti-social program" of the "strangely motivated" groups who delay the acceptance of community water fluoridation was adopted by the Council on Dental Health of the American Dental Association at its recent meeting in Chicago. Said the statement: "The anti-social program of the anti-fluoridationists must be countered, and the individual dentists and the dental societies must exercise aggressive leadership in all phases of activity which lead to the acceptance of fluoridation."

BOOK REVIEWS

MODERN GNATHOLOGICAL CONCEPTS

V. O. Lucia, St. Louis, C. V. Mosby Co., 1961. 610 p. Illus. \$20.00

Technically this book is exceedingly well published with a print that is easily read, good section headings and a multitude of first-class photographs and drawings. In fact, approximately one half of the volume is composed of these excellent illustrations. Unfortunately, references to illustrations are not always given and often the text does not clarify the illustration and vice versa. On the whole, one must congratulate the author and publisher on reproductions of photographs and drawings that are clear, precise and uncluttered.

As one who is not quite clear as to what is meant by "gnathology," this reviewer's understanding was not greatly improved by the author's quoted definition of the term as "the sum total knowledge required to suc-

cessfully treat the complex organ of chewing and this includes all the ramifications of dentistry." In his preface, the author states the need for a "manual, a do-it-yourself guide, a handbook that will be helpful when one begins to do this work." This book, however, could hardly be described in this way as it is highly technical and in many ways rather narrow in its scope.

Some phases of dentistry are very adequately covered, while others are glossed over in a vague sort of way. Almost one-fifth of the volume is devoted to descriptions of the use of four articulators, none of which could be described as being in general use. This part is thus of little value unless one has one of these articulators. Other sections are of limited value unless one uses the particular instrument or technique described. On the other hand, there are some excellent chapters on the philosophy of dental practice, anatomy and physiology of the masticatory mechanism, and on the principles of jaw relations and articulation. One

might criticize the fact that while the "Glossary of Prosthodontic Terms" is referred to, terminology used in the text is not constant throughout, and the use of different terms to denote the same thing often leads to confusion; and again, that terms are used that are listed as objectionable in the glossary.

While this book contains what are described as references, some chapters have only two or three, one has thirty-two, others have none at all, and none are referred to in the text. There are foot notes, however, to refer to specific products used, and to personal or direct communications. Numbered references at the end of each chapter and a bibliography at the end of the book could be of value and would have added to its usefulness.

It is doubtful whether this text would appeal to the vast majority of practitioners. Its usefulness is rather for those in the fields of periodontics, restorative dentistry, dental education, and for members of the Gnathological Society. While it is certainly not an undergraduate text, there is much of value and interest to the graduate and post-graduate student and it should be included in every reference library.

K. M. Kerr

proach to teratology, which should be correlated with a sound knowledge of normal development, permitting the course of abnormal embryonic events to be reconstructed. Chapter two deals with the mechanisms of environmental production of malformations, illustrated by considering intra-uterine deformation of bone. Chapter three considers necrotic type anomalies which cannot be explained on a morphological basis, illustrated by lesions commonly labelled "first arch syndrome." Chapter four investigates the genetic variations which may give rise to malformations. The entire text is liberally supplied with many fine photographs.

This book makes no attempt to describe all facial malformations, nor to review current teratological principles.

Rather the author presents his own theories, and has selected certain anomalies to provide a basis for discussion. This makes for extremely interesting and thought-provoking reading; but the book cannot be recommended as a text on the subject since it is incomplete and requires for its appreciation more background knowledge than is possessed by the average dental student or practitioner. This is an excellent book for those particularly interested in this field.

R. Bruce Ross

MALFORMATIONS OF THE FACE

D. Greer Walker. Edinburgh and London, E. & S. Livingstone Ltd., 1961. (Available from the MacMillan Company of Canada Ltd., Toronto.) 202 p. Illus. \$6.75

In this book the author points out the discrepancies inherent in current methods of classifying cranio-facial malformations on the basis of clinical appearances. He stresses that the aetiology of these conditions must be determined before a rational system of classification can be adopted. Although sufficient knowledge is not presently available, careful morphological studies and communication between clinicians and basic scientists may lead to success.

The book is divided into four chapters. Chapter one explains the morphological ap-

DIAGNOSIS AND SURGICAL MANAGEMENT OF DISEASES OF THE TEMPEROMANDIBULAR JOINT

B. G. Sarnat and D. M. Laskin. Springfield, Illinois, C. C. Thomas, 1962. (Available from the Ryerson Press, Toronto.) 90 p. Illus. \$6.00

In ninety pages this monograph presents the outstanding features of various diseases of the temperomandibular joint. The authors stress the importance of history taking in forming a diagnosis and tend toward conservatism in the treatment of these little-known conditions. There are 165 references, making it an excellent index for the general practitioner or the oral surgeon.

D. M. Tanner

Transactions of the Canadian Dental Association • The Association's *Transactions* contain reports of the activities of the various bureaux, councils and committees. Published in English and in French after every meeting of the Board of Governors, it is recommended reading for all Canadian dentists.

ADDITIONS TO THE LIBRARY

- AMERICAN ACADEMY OF PERIODONTOLOGY. Proceedings of a workshop for teachers in periodontology at the University of Minnesota, Minneapolis, June 23, 24, and 25, 1960. Edited by Perry A. Ratcliff, 1962. 107 p.
- BRITISH SOCIETY FOR THE STUDY OF ORTHODONTICS. Transactions, 1960. Bristol, John Wright & Sons Ltd., 1960. 160 p. illus.
- CAHN, R. and SLAUGHTER, D. P. Oral cancer; a monograph for the dentist. New York, American Cancer Society, Inc., 1962. 42 p. illus.
- CANADIAN DENTAL ASSOCIATION. A brief submitted to the Royal Commission on Health Services, March 1962. Toronto, Canada, 1962. 208 p.
- FRACKELTON, W. and SEELY, H. G. Sagebrush dentist as told by Dr. Will Frackelton to Herman Gastrell Seely. First rev. ed. Pasadena, Calif., 1947. 258 p.
- GRANGER, E. R. Practical procedures in oral rehabilitation. Montreal, Lippincott, 1962. 306 p. illus. \$19.50
- HARDMAN, F. G. Oral surgery for nurses. Bristol, John Wright & Sons, Ltd., 1961. 112 p. illus. \$2.70
- PHILLIPS, R. W. and SCHNELL, R. J. The use of rubber impression materials. (Practical Dental Monographs, May 1962.) 32 p. illus.
- ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO and ONTARIO DENTAL ASSOCIATION. Brief submitted to the Royal Commission on Health Services, May 1962. 53 p.
- SARNAT, B. G. and LASKIN, D. M. Diagnosis and surgical management of diseases of the temporomandibular joint. Springfield, Thomas, 1962. 90 p. illus.
- WORLD HEALTH ORGANIZATION, Geneva. Health services in the USSR. Public health papers No. 3. Report prepared by the participants in a study tour organized by W.H.O. 1960. 58 p.
- ZIONS RESEARCH PRODUCTS INC. Accelerated efficiency dental training manual. Vol. III "canister-tray set-ups." Organization of operating instruments and procedures. Salt Lake City, Utah, Zions Research Products, Inc., 1960. 71 p. illus. \$40.00

IN MEMORIAM

- FREDERICK BARRON—Dr. F. Barron of Paris, Ontario died on December 25, 1961. He was 85. Dr. Barron was born in Campbellford, Ontario in 1877. He studied at the Royal College of Dental Surgeons of Ontario and graduated in 1909. In 1959 he became a "Life Member" of the Royal College of Dental Surgeons. Surviving are his four sons, Gordon Barron, Ross Barron, Allen Barron and Alex Barron.
- LAWRENCE LLEWELLYN BUFFETT—Dr. L. L. Buffett of Glace Bay, Nova Scotia died on June 3, 1962. He was 57. Born in Sydney, Nova Scotia in 1905, Dr. Buffett

studied at Dalhousie University, graduating in 1929. He is survived by his wife, Clara, two sons, Lawrence M. Buffett of Halifax and Douglas Buffett of Glace Bay; a daughter, Carolyn Buffett; and three sisters, Miss Ann Buffett of Sydney, Miss Bessie Buffett of Sydney and Mrs. John (Minnie) Wilmhurst of Charlottetown, Prince Edward Island.

FRANK RAYMOND DUXBURY—Dr. F. R. Duxbury of Halifax, Nova Scotia died on June 13, 1962. He was 56. Dr. Duxbury was born in Moncton, New Brunswick in 1906. He studied at Dalhousie University, graduating in 1931. He is survived by his wife.

HAROLD SLACK PERCIVAL — Dr. H. S. Percival of Toronto, Ontario died on May 22, 1962. He was 62. Dr. Percival was born in Chantry, Ontario in 1900. He studied at the Royal College of Dental Surgeons of Ontario, graduating in 1922. He was connected with the Toronto Western Hospital's outpatient dental clinic from 1927 to 1930. He is survived by his wife, Celeala and one son, William James Percival.

ERIC RANDELL NORDIN—Dr. E. R. Nordin of Vancouver, British Columbia died on May 29, 1962. He was 61. Born in 1901, Dr. Nordin studied at the North Pacific Dental College (University of Oregon) in Portland, U.S.A. and graduated in 1924. He specialized in periodontics. Dr. Nordin was a past president of the Vancouver and District Dental Society. He is survived by his wife, one son and two grandsons.

PIERRE-AUGUSTE LIBOIRON — Le Dr P.-A. Liboiron de St-Jérôme, P. Qué., âgé de 60 ans, est décédé au cours du mois de juin 1962. Il était né à Ste-Agathe des Monts, P. Qué. en 1902. Le Dr Liboiron obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1928.

ERNEST ALBERT CLEVELAND—Dr. E. A. Cleveland of St. Lambert, P. Quebec, died on May 28, 1962. He was 96. Dr. Cleveland was born in Danville, P. Quebec in 1866. He studied at McGill University, graduating in 1896. He is survived by his son, Baxter Cleveland of St. Bruno, P. Quebec.

CONVENTIONS

Northern Ontario Dental Association Convention. Empire Hotel, Timmins, Ontario. September 7-9, 1962

Friday, September 7, 1962

6:30 P.M. Registration and Welcome

Saturday, September 8, 1962

9:30 A.M.	C. H. MOSES, Toronto: Prosthodontic Problems
12:30 P.M.	Luncheon, Imperial Room
2:30 P.M.	A. A. ANTONI, Toronto: Oral Surgery
4:30 P.M.	Business Meeting
6:15 P.M.	Cocktail Hour, Imperial Room
7:00 P.M.	President's Banquet and Dance

There is also a special program for ladies. Advance registration and accommodation may be arranged through Dr. F. A. Pollon, 67 Pine Street South, Timmins, Ontario.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
August 27-29, 1962	College of Dental Surgeons of Saskatchewan	Waskesiu, Saskatchewan	Dr. R. Reid	106 Electric Bldg., Prince Albert, Saskatchewan
Sept. 7-9, 1962	Northern Ontario Dental Association	Empire Hotel, Timmins	Dr. J. Shaw	137B, 3rd Avenue, Timmins, Ontario
Sept. 19-22, 1962	IIIrd Congress of the Yugoslav Dental Association	Ljubljana, Yugoslavia	Dr. V. Krusic	2 Zaloska, Ljubljana, Yugoslavia
Sept. 23-25, 1962	Eastern Ontario Dental Association	Chateau Laurier Hotel, Ottawa	Dr. J. Berman	226 O'Connor Street, Ottawa, Ontario
Oct 9-11, 1962	2nd Canadian Conference on Dental Research	Banff School of Fine Arts	Dr. C. W. B. McPhail	Faculty of Dentistry, University of Alberta, Edmonton, Alberta
Oct. 15, 1962	H. K. Box Memorial Lecture	Faculty of Dentistry, University of Toronto	Dr. C. H. M. Williams	124 Edward Street, Toronto 5, Ontario
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Quebec
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior Street, Chicago, Illinois
19-25 novembre, 1962	XXXVes Journées dentaires internationales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre-Haret, Paris 9e., France
Nov. 22, 1962	Academy of Dentistry, Toronto, Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario

TORONTO — The Faculty of Dentistry, University of Toronto offers courses to graduates in dentistry leading to specialist certification in the fields of dental public health, dental oral surgery and anaesthesia, orthodontics, paedodontics, and periodontics.

Programs of education and research leading to graduate degrees in the biological sciences related to dentistry may also be arranged.

The following short postgraduate courses will also be presented during the session 1962-1963: OCCLUSION and OCCLUSAL CORRECTION, October 15-19, 1962; PAEDODONTICS, January 7-8, 1963; ANATOMY: NORMAL and PATHOLOGICAL, February 6-8, 1963; ENDODONTICS, February 27-March 1, 1963; ORTHODONTICS, March 4-8, 1963; ORAL SURGERY, April 22-26, 1963; and PERIODONTICS, May 6-10, 1963.

Enquiries and applications should be directed to the chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto, Ontario.

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institution.

L'Association Dentaire Canadienne.

JOURNAL

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Etude sur la situation économique des chirurgiens dentistes du Québec

par LOUIS-C. ROY,* Québec, P. Qué.

Lorsque l'on m'a demandé de vous adresser la parole pour vous entretenir de vos problèmes économiques, j'avoue que j'ai été quelque peu surpris. Un rapide coup d'œil aux statistiques publiées par le gouvernement fédéral, division de l'impôt sur le revenu, pour l'année 1959, révèle en effet qu'au cours de cette année-là, les dentistes ont gagné en moyenne \$11,605. Ils se classaient donc en quatrième place,

après les médecins et les chirurgiens, les ingénieurs et les architectes, les avocats et les notaires. Toujours d'après les statistiques fédérales, je constatai que les dentistes ne devaient pas être trop à plaindre, tout de même, puisque 87.16% de la population au moins avait un revenu inférieur au leur.

Si d'autre part, vous considérez que le revenu moyen du contribuable canadien en 1959 a été de \$4,113, vous en venez forcément à la conclusion que, si les dentistes ont des problèmes économiques, c'est relativement à d'autres professionnels, et non pas à l'ensemble de la population.

Conférence prononcée au Congrès de l'Association dentaire de la province de Québec, à Chicoutimi, le 25 mai 1962.

*Professeur à la Faculté de commerce de l'Université Laval, Québec.

Après avoir étudié attentivement la documentation fournie par le docteur Robert Le Blanc et le docteur Gustave Ratté, il m'est apparu que même si les problèmes économiques des dentistes sont relatifs, ils n'en sont pas moins réels.

Grosso modo, on pourrait classer ces problèmes en trois catégories:

(a) Problèmes propres aux professions libérales,

(b) Problèmes particuliers à la profession de dentiste,

(c) Problèmes particuliers aux dentistes québécois.

PROBLÈMES PROPRES AUX PROFESSIONS LIBÉRALES

(a) *Durée des études.*—Même si l'on ne tient pas compte du fait que pour être admis à l'étude de la chirurgie dentaire, un étudiant doit avoir complété de 13 à 15 ans d'études primaires et secondaires, on constate que les quatre années requises pour obtenir le titre coûte selon les cas et les estimés entre \$6,500 et \$11,700.

Selon toute vraisemblance, cet écart assez considérable est fonction des facteurs suivants: l'université et la province où l'on étudie, les exigences de l'étudiant au point de vue confort, ses moyens financiers, la possibilité de poursuivre ses études dans sa ville natale ou l'impossibilité de le faire.

(b) *Période active retardée.* — A cause des exigences de ses études universitaires, le dentiste ne peut commencer à gagner sa vie qu'à un âge relativement avancé. Il s'ensuit qu'au moment où il commence à travailler, la plupart de ses congénères canadiens non professionnels, gagnent déjà depuis 4 à 7 ans.

Par conséquent, on pourrait mesurer l'handicap du jeune dentiste en disant

que, non seulement doit-il déboursier en moyenne environ \$8,000 pour faire ses études universitaires, mais il sacrifie environ \$15,000 de revenu. Selon les cas, on peut donc dire que la décision que prend celui qui désire devenir dentiste implique un sacrifice financier de l'ordre de \$20,000 à \$25,000.

(c) *Période de pleine efficacité relativement courte.*—Le jeune dentiste n'étant pas en mesure de commencer à pratiquer avant l'âge de 22 ou 25 ans, il s'ensuit que, relativement toujours, sa possibilité de gain total est d'autant plus restreinte, qu'à partir d'environ 55 ans et, dans bien des cas, avant cet âge, son rendement commence à décroître ainsi que sa capacité de travail. On a même constaté que chez les dentistes, le rendement commence à décroître, dans certains cas, dès l'âge de 50 ans.

Incidemment, c'est là une caractéristique des professions libérales que le grand public ignore. On oublie généralement que le professionnel travaille de longues heures dans un état de tension continue et que la nature même de ses activités lui interdit de travailler fatigué. On parle souvent des revenus élevés des professionnels, mais sans tenir compte de la contrepartie, i.e. l'usure prématurée de la résistance physique et nerveuse et la stricte discipline à laquelle le professionnel doit se soumettre afin d'être en mesure de pratiquer sa profession en donnant le meilleur de lui-même.

(d) *Revenu annuel non garanti.*—C'est là une caractéristique plutôt récente de la profession libérale, depuis l'introduction de clauses portant sur la garantie du revenu dans les conventions collectives de travail. Il n'en reste pas moins que le revenu du professionnel est fonction directe de sa capacité de travail. Plus que quiconque dans notre société, il est strictement payé à la pièce! S'il désire se reposer, se récréer, ou s'il est malade, il n'a droit à aucun jour de maladie payé.

(e) *Retraite non garantie.* — Nous aurons l'occasion de revenir sur ce point tout à l'heure, mais notons en passant que, si le professionnel n'a pas prévu le jour où il cessera de travailler, il peut être très à la gêne pendant sa retraite. Cette caractéristique des professions libérales est tellement importante, que, dans bien des cas, on considère qu'un professionnel gagnant \$9,000, par exemple, au service d'un organisme offrant un plan de pension, est aussi bien rémunéré que son collègue qui, dans la pratique privée, gagne \$11,000 par an.

PROBLÈMES PARTICULIERS À LA PROFESSION DE DENTISTE

Il faut reconnaître, je crois, que les dentistes, en général, doivent faire face à des problèmes qui sont particuliers à la profession qu'ils exercent. Sans prétendre dresser une liste complète de ces problèmes particuliers, j'aimerais attirer votre attention sur les trois points suivants:

(a) *Travail fatigant.* — Nous venons de souligner que les professionnels, surtout ceux de la pratique privée, travaillent avec tension et longtemps, ce qui amène des implications déjà soulignées. Dans le cas du dentiste, cet aspect revêt une importance particulière. Farcie de rendez-vous, sa journée de travail se déroule dans un feu roulant. Constamment sur ses jambes, il effectue un travail minutieux exigeant beaucoup de concentration. Il n'a pas, comme certains de ses collègues des autres professions médicales, la possibilité de se détendre en changeant de local par exemple, en utilisant sa voiture pour aller d'un malade à un autre, ou d'un hôpital à un autre. On admire avec raison le chirurgien qui opère pendant 3 ou 4 heures. Sans vouloir faire de comparaisons oiseuses, je

souligne simplement que le dentiste exerce lui aussi une des professions les plus "tendues".

Tout ceci pour rappeler que le facteur fatigue est particulièrement important lorsque l'on considère le rendement du dentiste. On décèle les répercussions tangibles de cet état de chose, en constatant que, d'après les statistiques, la période de gain maximum du dentiste semble n'être que d'une durée d'environ 15 ans, soit de 30 à 45 ans.

(b) *Frais de bureau élevés.* — Parmi les professionnels de la pratique privée, le dentiste est peut-être celui qui retire le plus faible pourcentage du dollar d'honoraires. Je n'ai malheureusement pas de données précises sur les autres professions, mais, sans préjudice, comme disent les hommes de loi, il semblerait que le dentiste retire de 10 à 25% moins de son revenu net que son collègue de la médecine par exemple. Dans la province de Québec, le revenu net du dentiste représente environ 53% de son revenu total brut.

(c) *Public ignorant de la nécessité des soins dentaires.* — Au Canada, comme aux Etats-Unis, les revues de l'Association dépeignent et les statistiques gouvernementales soulignent le fait que la majeure partie de la population ne se préoccupe pas suffisamment de ses dents. On constate qu'en moyenne une personne sur 7 visite le dentiste, chaque année. On est loin de la visite annuelle ou même biannuelle recommandée.

D'après une étude effectuée par le "National Opinion Research Center" des Etats-Unis, en 1955, il appert que, bien souvent, les gens ne vont pas chez le dentiste parce que: ils remettent continuellement leur visite à plus tard, le coût est trop élevé, ils ont peur, ou sont trop occupés.

PROBLÈMES PARTICULIERS AUX DENTISTES QUÉBÉCOIS

Enfin, lorsque l'on étudie la situation économique du dentiste, il est important de remarquer que, non seulement doit-il faire face à des problèmes dont la plupart des professionnels de la pratique privée portent le fardeau, non seulement doit-il faire face aux problèmes particuliers à sa profession, mais, s'il pratique dans la province de Québec, il rencontre de plus des difficultés particulières aux dentistes exerçant dans cette province. On note en particulier les deux items suivants:

(a) *Public particulièrement peu enclin à aller chez le dentiste.* — Il y a plusieurs statistiques publiées à ce sujet dans différents périodiques, et vous pouvez les consulter très facilement. Remarquons cependant qu'alors qu'en 1958, par exemple, d'après le bureau fédéral de la statistique, on enregistrerait 323 visites par 1,000 de population dans l'ensemble du Canada, il n'y en avait que 273 dans la province de Québec.

Il est fort probable d'ailleurs, que si une enquête semblable à celle que nous avons citée plus haut sur les raisons qui tiennent les gens éloignés du fauteuil du dentiste, on remarquerait que les mêmes explications sont valables dans la province de Québec, mais probablement avec un plus fort pourcentage d'incidence.

Autres chiffres significatifs: on a constaté qu'en 1954, 982 personnes ont visité leur dentiste québécois, alors qu'en Ontario 1,017 l'ont fait, et que dans toutes les autres provinces à l'exception de l'Île du Prince-Edouard, plus de personnes ont visité le dentiste qu'au Québec.

(b) *Le revenu du dentiste québécois est généralement inférieur à celui de la plupart de ses collègues des autres provinces.* — Il n'est sans doute pas nécessaire d'insister sur ce point, car vous savez ce qui en est aussi bien que moi. Je me contente donc

de vous rappeler qu'en 1958, par exemple, alors que le revenu net moyen du dentiste au Canada était de \$10,453, le dentiste québécois, avec un revenu moyen de \$8,475, gagnait moins que tous ses autres collègues des autres provinces, à l'exception de ceux de l'Île du Prince-Edouard dont le revenu était de \$6,369. En Ontario, la moyenne était de \$10,913, alors que le maximum se rencontrait en Colombie britannique, avec un revenu moyen de \$11,855.

THERAPEUTIQUE

Après avoir brossé un tableau succinct des principaux problèmes économiques auxquels le dentiste québécois doit faire face et avoir classé ses problèmes dans trois catégories générales, il est logique, je crois, de se demander ce que l'on peut faire pour obvier à cette situation relativement inconfortable.

Dans cette seconde partie de notre entretien, nous allons donc, si vous le voulez bien, reprendre chacun des principaux problèmes économiques dont il vient d'être question, en vue de déterminer le type de solution susceptible de donner les meilleurs résultats dans les circonstances.

(a) *Etudes longues et coûteuses.* — C'est là une caractéristique de toutes les professions qui va d'ailleurs en s'accroissant, à mesure que la recherche effectuée dans chacune des disciplines professionnelles concernées donne lieu à une augmentation des connaissances requises pour pratiquer une profession.

Sur un plan général, on constate présentement un effort collectif en vue de permettre à tous ceux qui ont les talents requis d'avoir accès aux études universitaires. Il reste encore beaucoup à faire dans ce domaine, sans doute, mais je crois que dans les milieux gouvernementaux tout comme dans le grand public, on

réalise de plus en plus qu'une société ne peut rester dynamique et progressive qu'à condition d'avoir une élite bien formée dans tous les domaines. On ne peut donc plus se permettre le luxe de tolérer que seuls les économiquement forts puissent avoir accès aux études universitaires. La formation de l'élite ne doit pas être fonction de l'argent, mais bien du talent. Concurremment à l'effort déjà entrepris par nos différents gouvernements, il y aurait peut-être lieu d'envisager une action supplétive et collective de la part des dentistes au niveau de leur association. Cette action pourrait se concrétiser par l'établissement d'une fondation dont le but serait d'aider financièrement les élèves en chirurgie dentaire qui, tout en ayant les talents requis, n'ont pas les moyens financiers de poursuivre et même de terminer leurs études.

(b) *Recrutement.* — Bien que ce problème soit plutôt de nature professionnelle que strictement économique, l'Association pourrait entreprendre une campagne de recrutement auprès des finissants du cours secondaire. Cette campagne pourrait prendre la forme d'une brochure destinée à renseigner les jeunes sur la profession dentaire, tout en les aidant à s'orienter.

En tant que professeur d'université, je puis vous dire que trop nombreux sont nos jeunes qui ne savent pas où s'orienter lorsqu'ils terminent leurs études secondaires. C'est pourquoi, je crois que la distribution massive d'une publication bien rédigée aiderait grandement les finissants du cours secondaire à s'orienter.

On pourrait aussi organiser sur le plan local des rencontres avec les orienteurs attachés aux maisons d'enseignement secondaire afin de les documenter adéquatement sur les beautés et les exigences de la profession.

(c) *Sécurité financière du dentiste.* — On peut obvier de plusieurs façons au désa-

vantage que présente cette caractéristique des professions libérales.

Sur le plan collectif, l'Association pourrait, après consultation, offrir à ses membres un plan de pension national auquel tout dentiste pourrait adhérer.

Sur le plan individuel, il est important que chaque professionnel élabore pour lui-même, en prenant conseil d'experts en la matière, un programme d'assurances et de placements adapté à ses besoins particuliers.

M'adressant à un auditoire comme le vôtre, j'imagine qu'il est superflu d'insister sur la distinction entre assurances et placements. En me basant sur l'expérience passée, cependant, j'attire votre attention sur la nécessité de consulter des spécialistes pour établir ce programme. On constate, en effet, que bien souvent le professionnel, qui réalise un revenu substantiel pendant une certaine partie de sa carrière, se croit automatiquement des dons innés d'homme d'affaires. Il devient alors souvent une proie facile pour ce que l'on appelle en jargon de métier des engins d'assurances ou de placements. Quelques-uns d'entre vous ont peut-être d'ailleurs subi certaines petites expériences à la bourse et savent parfaitement ce dont je veux parler.

Quoi qu'il en soit, il faut bien comprendre que l'Association ne peut endosser les responsabilités qui incombent normalement à l'individu. C'est donc à lui de préparer son avenir, quitte à se prévaloir de facilités de groupe obtenues par l'entremise de son Association.

(d) *Revenu moindre du dentiste québécois.* — Plusieurs facteurs contribuent à produire cet état de chose. C'est pourquoi je vais essayer de les isoler les uns des autres, afin de pouvoir mieux les étudier d'une part et apporter des éléments positifs de solution d'autre part.

J'attire immédiatement votre attention sur le fait que ces facteurs n'ont pas été classés nécessairement par ordre d'importance, mais plutôt selon qu'ils se sont présentés à mon esprit.

1. Facteur démographique. — Une étude rapide de la concentration démographique dans notre province permet de constater qu'on y trouve beaucoup de petites agglomérations rurales et même urbaines. Le jeune dentiste qui songe à s'établir quelque part a donc tout intérêt à procéder à une étude de marché, pour ainsi dire, avant de prendre une décision finale. Cette première considération peut vous paraître assez simpliste, et peut-être même au-dessous des préoccupations normales d'un professionnel, mais, puisque nous en sommes sur les considérations économiques, je crois qu'il est essentiel d'en tenir compte. Votre association possède une documentation impressionnante sur ce sujet et j'imagine que le futur professionnel et même le dentiste pratiquant peuvent facilement y avoir accès.

2. Education du public. — Je vous citais tout à l'heure une enquête américaine sur les raisons pour lesquelles les américains ne fréquentent pas plus souvent le bureau de leur dentiste. J'avoue ne pas être très au courant de ce qui s'est fait au Canada dans ce domaine, mais je crois qu'une enquête semblable s'impose pour ce pays, sinon pour la province de Québec, si ce n'est déjà fait. Une fois que l'on connaît les causes d'une situation donnée, on peut alors beaucoup plus facilement orienter la publicité de façon à lui assurer un maximum d'efficacité. La forme éducative que revêtait cette publicité ne serait pas, il me semble, incompatible avec l'éthique de la profession.

Bien que l'Association, compte tenu des moyens financiers dont elle dispose, puisse sans doute aider à orienter le public vers le bureau du dentiste le plus rapproché, il n'en reste pas moins que ce dernier peut également faire beaucoup, par sa propre attitude, pour inciter à venir le voir.

A ce sujet, permettez-moi d'énumérer certains points d'ordre administratif, pour ainsi dire, qui ne vous apparaîtront peut-être pas très importants, pris isolément,

mais qui peuvent le devenir, pris dans leur ensemble.

Vous avez sans doute remarqué que la plupart des gens sont extrêmement crispés lorsqu'ils sont dans le fauteuil du dentiste. Il est important que les séances ne soient pas longues afin que le client ne soit pas trop fatigué. S'il sort de chez vous épuisé (le terme est peut-être fort), il n'a certainement pas le goût de renouveler l'expérience de sitôt.

Faites-vous attendre vos clients dans l'antichambre? Vous êtes très occupé, cela va s'en dire, mais votre client a aussi son bagage d'occupations urgentes, qu'il s'agisse d'un homme qui travaille ou d'une mère de famille. Il ne faut pas oublier non plus que les enfants sont extrêmement occupés à jouer et que, si eux aussi doivent faire antichambre, cela les irrite.

Votre salle d'attente est-elle bien éclairée, agréablement décorée, munie de fauteuils confortables? La radio joue-t-elle en sourdine? Avez-vous disposé à des endroits stratégiques des magazines adaptés à votre type de clientèle? Si cette dernière est presque exclusivement de langue française, il se peut que votre abonnement à *Time* ou *Life* ne leur procure pas grande distraction. Si vous recevez de jeunes enfants, ils seront peut-être les premiers à rappeler à leur mère qu'ils devraient aller vous voir, s'ils savent que vous avez une bonne collection de "Tintin".

Quelle réception fait-on aux clients dans votre bureau? Puisque la plupart de ceux-ci viennent sur rendez-vous seulement, votre réceptionniste se fait-elle un point d'honneur de les accueillir par leur nom? Prenez-vous vous-même la même précaution? Causez-vous avec votre client lorsqu'il est assis dans le fauteuil? Plus la réception est chaude et amicale, sans devenir pour tout cela populassière, plus on est incité à revenir à cause de souvenirs agréables que l'on conserve de sa visite.

Essayez-vous d'inculquer à vos clients, pendant que vous les avez entre les mains, la notion de soins préventifs? Il n'y va pas seulement de votre intérêt, mais c'est également votre devoir d'inculquer à votre clientèle de simples principes

quant à l'entretien et la conservation des dents. Si vous me permettez une comparaison, je vous ferai remarquer que vous appréciez beaucoup sans doute les conseils du garagiste qui vous avertit dès qu'il constate quelque chose d'anormal dans votre voiture et qui insiste gentiment pour que vous fassiez faire les vérifications d'usage, les graissages et les changements d'huile qui s'imposent périodiquement. Remarquez d'ailleurs que la publicité des grandes compagnies d'essence est orientée dans ce sens, non seulement parce que vous évitez ainsi les pannes malencontreuses en cours de route, mais aussi parce que, en définitive, il vous en coûte moins cher. De leur côté, les grosses compagnies savent très bien que ce qui les paie le plus c'est la continuité d'une clientèle satisfaite.

Tenez-vous à date un fichier contenant toute l'histoire d'un client? Rappelez-vous que dans ce cas, il devient extrêmement facile et peu dispendieux d'envoyer une carte postale à chacun de vos clients, disons 6 mois après sa dernière visite, pour lui faire remarquer qu'il est temps de revenir vous voir.

Enfin, il existe certainement un autre point sur lequel il est important de renseigner le public. Il s'agit du coût des soins dentaires. Vous trouvez sans doute que vos revenus ne sont pas particulièrement élevés. Nous avons vu que, comparativement, cette affirmation est exacte. Rappelons-nous cependant que, pour le grand public, votre situation financière est loin d'être tragique. C'est pourquoi je crois qu'il serait important de procéder à une enquête en vue de déterminer dans quelle mesure le public se détourne des soins dentaires par suite d'un préjugé quant à leur coût; on a découvert que 14% des gens s'abstiennent des soins dentaires pour cette raison. Si tel est le cas dans la province de Québec, par exemple, il faudra certainement s'occuper du problème, puisqu'il s'agira de plusieurs centaines de milliers de personnes. A ce moment-là, s'il y a lieu, on pourrait peut-être établir des comparaisons du coût des

soins dentaires par rapport à ceux encourus pour l'entretien d'automobiles, d'appareils de télévision, d'articles de ménage etc. Il existe déjà des données sur le pourcentage du budget familial moyen consacré au maintien de la santé et l'étude de l'évolution de ces pourcentages sur un certain nombre d'années permettrait sans doute de trouver des arguments intéressants pour les dentistes. Eventuellement, on pourrait parler de faciliter le financement accordé pour les soins dentaires.

J'avoue cependant que l'idée d'éduquer le public dans ce domaine m'a peur quelque peu. Dans les circonstances actuelles, le public semble particulièrement chahuteux sur la question des honoraires. C'est pourquoi, je préconise une très grande prudence, avant de s'aventurer à discuter prix devant la masse, craignant que cette méthode d'éducation ne se transforme en boomerang australien.

3. Tarifs. — En étudiant les chiffres publiés par votre Association, j'ai constaté que les taux demandés par les dentistes québécois pour plusieurs soins et services sont plus bas que dans la plupart des autres provinces. Ceci peut expliquer, en partie, pourquoi le revenu moyen des dentistes québécois est inférieur à celui de ses collègues de la plupart des autres provinces. N'ayant pas été plus loin que la simple constatation de ce fait, je me borne donc à le mentionner en faisant remarquer à tout hasard, que la création d'un comité permanent au sein même d'une association, auquel on confierait la tâche de reviser sans cesse les barèmes, à la lumière de l'évolution des coûts, serait peut-être très utile. Une étude continue de cet item important éviterait des augmentations occasionnelles considérables, toujours susceptibles de susciter une réaction défavorable dans le public. Remarquons de plus, que lorsque les taux ne sont pas révisés systématiquement, c'est surtout peut-être le praticien qui en souffre, parce que les réalités économiques ne seront reconnues qu'en retard.

4. Efficacité. — Au début de cet entretien, nous avons vu que le dentiste, comme la plupart des professionnels de la pratique privée, est payé en fonction presque directe du travail qu'il accomplit. Il est donc important que celui-ci s'arrange pour travailler de la façon la plus efficace possible.

Il y a plusieurs façons d'améliorer le rendement, mais je n'en citerai que quelques unes.

(i) Disposition des instruments. — Un peu d'attention de la part du praticien suffira pour lui indiquer comment disposer les meubles et les instruments dans son cabinet. Il s'arrangera pour ne pas avoir un bureau trop grand, afin de ménager ses pas. Il placera ses instruments de telle sorte qu'il puisse les atteindre facilement en ayant à se déplacer le moins possible lorsqu'il travaille auprès du client. Autant que possible, les instruments, surtout ceux d'usage courant, seront toujours placés au même endroit afin d'éviter d'avoir à les chercher.

Ce sont là des suggestions simplistes, me direz-vous, mais je crois qu'elles ont leur importance. Les études effectuées dans l'industrie démontrent en effet, qu'à la longue surtout, une disposition mauvaise ou erratique des instruments de travail taxe considérablement la résistance du système nerveux. Le professionnel a donc tout avantage à mettre en pratique les principes d'économie de mouvements que l'on observe avec d'excellents résultats dans l'industrie.

(ii) Nombre de fauteuils. — Des statistiques très intéressantes ont été publiées par votre Association sur ce sujet, avec indication du revenu moyen selon le nombre de fauteuils à la disposition du dentiste. Ainsi, on a découvert que le revenu de celui-ci est d'environ \$9,000 avec un fauteuil, \$12,000 avec deux \$14,500 avec trois et \$17,000 avec quatre. On remarque d'ailleurs que si 45% des dentistes n'ont qu'un fauteuil, 50% en ont deux. Evidemment ceux qui ont plus de

2 chaises sont relativement rares. Statistiques mises à part, il semble logique d'avoir au moins 2 chaises, puisque cela permet au professionnel de s'affairer auprès d'un autre client, en attendant de pouvoir continuer le traitement qu'il est parfois obligé de suspendre, pour différentes raisons, auprès du premier client.

(iii) Aide. — Ici encore, l'exemple de l'industrie peut nous aider à améliorer l'efficacité du professionnel. Dans les affaires, on a appris depuis longtemps que les travaux de routine ne requérant aucune qualification particulière, ou n'exigeant qu'un entraînement relativement court, doivent être effectués par des subalternes. Cette pratique permet au patron de consacrer toute son attention et son énergie à des travaux qui sont à la mesure de ses capacités, de son entraînement et de ses responsabilités.

Je ne suis pas en mesure de vous donner des conseils précis sur ce point, mais je crois que tout dentiste doit faire une étude objective des tâches qu'il accomplit au cours d'une journée et déléguer à un personnel moins qualifié que lui tout travail qui ne requiert pas l'apport de ses propres connaissances professionnelles. Il est d'ailleurs intéressant de constater que, d'après une étude effectuée en 1958 par votre Association, on a constaté que les dentistes qui faisaient les plus forts revenus étaient ceux qui avaient à leur service 2.5 employés et plus.

5. Rapports d'impôts. — Enfin, vous ne m'en voudrez pas, j'espère, si je vous taquine un peu, en vous disant que, d'après certaines sources, un autre facteur contribue à expliquer pourquoi, selon les statistiques du gouvernement fédéral, le revenu des dentistes de la province de Québec est inférieur à celui de leurs collègues des autres provinces. On prétend tout simplement que les dentistes québécois, à l'instar d'autres professionnels d'ailleurs, ne confessent pas leur revenu aussi complètement qu'on le fait dans d'autres régions du Canada!

CONCLUSIONS

Je n'ai pas la prétention de croire avoir réglé tous vos problèmes financiers. Je suis convaincu d'ailleurs que ce n'est pas ce que vous attendiez de moi puisqu'en somme, c'est vous, par un effort collectif et individuel, qui êtes seuls en mesure d'améliorer votre sort.

J'attire votre attention sur le fait que dans un domaine comme celui-là, il n'y a pas de formule magique. Certains de vos problèmes peuvent se régler assez rapidement, lorsque la mise en application d'une solution pratique dépend uniquement de l'individu en cause. Il faut cependant se rendre compte que, lorsque l'amélioration d'une situation dépend d'un effort collectif et même, dans certains cas, de l'éducation du public, il faut du temps. Néanmoins, j'espère que quelques-unes des idées émises au cours de cette causerie vous seront utiles et vous remercie de votre bienveillante attention.

SUMMARY

The author reviews the economic status of the average dentist in the province of Quebec.

By comparing the average Quebec citizen's income with that of the dental practitioner, one might surmise that the dentist's financial status is reassuring. How-

ever, discrepancies are revealed if one compares the Quebec dentist's income to that of other professional people or to dentists' incomes in other provinces.

The average income in most professional pursuits does not necessarily reflect actual career earnings. In the case of the self-employed practising dentist the following factors operate on the average income to produce actual career earnings: late start in practice, reduced period of productivity, lack of a guaranteed income, and lack of an assured pension. The situation is further complicated by the nature of the dentist's work, his considerable overhead operating expenses, and the passive attitude of the general public regarding dental care. All these factors are accentuated in the province of Quebec.

The situation could be improved in many ways — for example: financial assistance to dental students, student recruitment, and the establishment of a retirement plan on a national scale. Particularly in Quebec could the dentist improve his income through careful selection of a locality in which to practise, education of the public, improvement of the atmosphere of the dental office, periodic revision of fee schedules, adequate use of auxiliary personnel, and by the conduct of time and motion studies.

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Conseil des Gouverneurs • Le Conseil des Gouverneurs de l'Association dentaire canadienne se compose de membres choisis par les organismes dentaires des dix provinces du Canada. Le conseil s'assemble, chaque année, durant les quelques jours qui précèdent le congrès. Tous les membres de l'Association dentaire canadienne peuvent participer aux assemblées annuelles du conseil.

Délibérations de l'A.D.C. • Les *Délibérations* de l'Association dentaire canadienne renferment des comptes rendus du travail de ses conseils, de ses comités et de ses bureaux. On conseille à tous les dentistes du Canada de lire ces *Délibérations* qui sont publiées après la réunion annuelle du Conseil des Gouverneurs.

LES ACTUALITES DENTAIRES

L'Association

LE DOCTEUR KEENAN DEVIENT PRESIDENT DE L'A.D.C.

Le docteur M. V. J. (Vince) Keenan, de Sudbury, Ontario, est le nouveau président de l'Association dentaire canadienne. Le docteur Keenan a été intronisé dans ses nouvelles fonctions par le docteur Harold M. Cline, au déjeuner de l'Association au cours du récent congrès dentaire tenu à Vancouver, du 3 au 6 juin. Le docteur Keenan, qui a consacré une grande partie de sa vie à diverses organisations, a été président du Lions Club de Sudbury, grand chevalier des Chevaliers de Colomb et membre de la commission scolaire de Sudbury. Il a, durant plusieurs années, représenté son district comme directeur du Collège royal des chirurgiens-dentistes d'Ontario et dont il a été le président de 1958 à 1960. Il agit, depuis 1955, comme délégué de l'Ontario au Conseil des Gouverneurs de l'Association dentaire canadienne. Il est "fellow" du Collège international des dentistes. Né à Sault Ste-Marie, en Ontario, le docteur Keenan a exercé sa profession à Sudbury depuis la fin de ses études à l'Université de Toronto, en 1924.

LE CONGRES DE L'A.D.C. ATTIRE 1,700 PERSONNES

Le soixante-et-unième congrès de l'Association dentaire canadienne se classe au deuxième rang parmi les congrès qui ont attiré le plus de participants. En effet, se sont enregistrés à ce congrès de juin dernier: 911 dentistes, 571 épouses de dentistes, 11 hygiénistes, et 150 assistantes. On obtient facilement le nombre de 1,700, si on compte les exposants et leurs représentants. Ce congrès, organisé conjointement avec le quarante-sixième congrès de l'Association dentaire de la Colombie britannique, a eu lieu à Vancouver, dans le Queen Elizabeth Theatre, à Vancouver, du 3 au 6 juin (le

congrès de l'A.D.C. à Montréal, en 1958, avait attiré quelque 2,000 personnes).

Le Conseil des Gouverneurs de l'Association dentaire canadienne s'est assemblé à l'Hôtel Vancouver du 30 mai au 2 juin. Plus de 40 dentistes venant de toutes les régions du Canada ont assisté aux réunions du Conseil en plus des Gouverneurs, des présidents de comités et du personnel du secrétariat. Le Conseil Exécutif s'est réuni à deux reprises, à cette occasion; une fois, avant les assemblées du Conseil et une fois, après.

Les congressistes, depuis de début du congrès, c'est-à-dire le concert du dimanche soir et l'exposition artistique, jusqu'à la danse de clôture, ont été tenus occupés par une grande variété de conférences, de cliniques, d'expositions et de réunions sociales. Une prévision de tous les détails et un minutage parfait des items au programme ont marqué ce congrès qui a obtenu un succès extraordinaire, grâce au travail de tous les membres du comité du congrès sous la direction du docteur Leslie Marshall.

L'A.D.C. REITERE SON APPUI POUR LA FLUORATION

L'Association dentaire canadienne, sur la recommandation de son conseil des recherches a réitéré son approbation à la fluoration de l'eau des aqueducs. Le conseil des recherches, dans son rapport annuel au Conseil des Gouverneurs, déclare que la fluoration est sûre, économique et efficace pour réduire des 2/3 la carie dentaire.

L'Association a donné son approbation en 1953 et, depuis ce temps, elle a toujours gardé la même politique. La résolution approuvée à la réunion de 1962 se lit comme suit:

"Considérant que la carie dentaire dont souffre la majorité des habitants du Canada est reconnue comme un des problèmes majeurs de santé publique;

"Considérant que la fluoration est une mesure de santé publique qui a été l'objet de recherches les plus variées au cours des dernières trente années;

"Considérant que ces recherches ont prouvé que les fluorures, dans la proportion d'une partie pour un million de parties d'eau, ne produisent aucun effet nocif et qu'ils contribuent à abaisser des deux tiers l'incidence de la carie dentaire;

"Considérant que les enfants bénéficient de la fluoration et que ses effets se perpétuent chez les adultes;

"Il est proposé que l'Association dentaire canadienne réitère ses recommandations au peuple canadien pour que les municipalités qui ont un aqueduc adoptent un système par lequel elles ajoutent du fluor à eau pour lui donner une teneur en fluor jugée adéquate pour prévenir autant que possible la carie dentaire et que, dans ce but, elles sollicitent les conseils de leurs dentistes, leurs médecins et leurs ingénieurs."

LE DOCTEUR EMERY JONES NOMME MEMBRE HONORAIRE

Le docteur Emery C. Jones, de New Westminster, C-B, a été nommé membre honoraire de l'Association dentaire canadienne, au cours du congrès qui a eu lieu récemment à Vancouver. Seulement vingt-et-une autre personnes ont reçu cette marque de distinction. Le docteur Jones, maintenant à sa retraite, a été très actif, durant de nombreuses années, dans les organisations sociales et professionnelles. Il a représenté son district durant 28 ans au Collège des chirurgiens-dentistes de la Colombie britannique; il en fut le président et le registraire-trésorier. Il fut membre de la commission scolaire de New Westminster durant 8 ans et membre fondateur du Club Kiwanis de sa ville. Il est "fellow" du Collège international des dentistes. Le docteur Jones, avant de s'installer sur la côte du Pacifique, avait exercé durant six ans, à Dundas, Ontario, après la fin de ses études à l'Université de Toronto.

BOURSES DE RECHERCHES, DURANT L'ETE SE CHIFFRENT A \$7,000.

Le conseil des recherches de l'Association dentaire canadienne annonce qu'il a octroyé des bourses au montant de \$7,000 à des étudiants dentaires qui travaillent à des projets de recherches durant leurs vacances d'été dans des laboratoires de recherches de leur université. Les dix bourses ont été octroyées pour l'été 1962 à des étudiants des facultés de Dalhousie, Manitoba, McGill, Montréal et Toronto.

Le but de ces bourses du conseil des recherches est de fournir l'occasion à des étudiants d'acquérir de l'expérience en recherches pour devenir professeurs ou pour qu'ils combinent une grande lacune en chirurgie dentaire en devenant chercheurs. Plus de \$36,000 ont aussi été donnés en bourses à des étudiants depuis que ce système a été commencé en 1955; de plus, le conseil a versé au-delà de \$50,000 pour des bourses de recherches à des dentistes.

APPROBATION DU PLAN DENTAIRE DES EMPLOYES DE L'A.D.C.

Le Conseil des Gouverneurs, à son assemblée de Vancouver, a approuvé unanimement un plan de traitements dentaires pour les employés de l'Association. Ce système d'assurance, le premier du genre à être établi au Canada, fonctionnera sur une base expérimentale pour étudier son administration.

Le plan couvre tous les employés qui travaillent à plein-temps pour l'Association, les épouses et les enfants des employés masculins.

Toute personne inscrite au plan a droit, chaque année, à un examen (radiographie comprise, si nécessaire) et à une prophylaxie. Les traitements ne comportent pas de clause déductible. Les premiers vingt-cinq dollars, pour des traitements, exception faite de l'examen annuel qui est gratuit, sont payés par l'assuré. Le montant déductible, au cours de la seconde année et des suivantes, se chiffre à dix dollars. D'autres sommes déductibles peuvent se présenter, quand il s'agit de traitements d'orthodontie ou de prothèse. Le maximum payé, durant la première année, pour des soins se limite à \$200 pour un individu, et à \$500 pour une famille. Le plan, après la déduction normale, couvre 80% des dépenses raisonnables encourues pour faire soigner, sur recommandation d'un dentiste, une maladie, un défaut ou blessure dentaires. Les personnes assurées peuvent choisir leur dentiste.

Le plan ne couvre pas les frais encourus pour la dentisterie esthétique, des blessures occasionnées par une guerre, les blessures ou les défauts résultant du travail ordinaire et tout service couvert par une assurance ou le gouvernement. Le plan, au début, est administré par le Bureau des recherches économiques de l'A.D.C. Le Bureau se propose de reviser le plan, chaque année, pour réajuster les primes, s'il y a lieu de le faire.

Le Canada

NOUVEAU-BRUNSWICK

Décès d'un fondateur de l'A.D.C. — Le docteur Frank A. Godsoe est décédé, il y a quelques semaines, à sa résidence, au Nouveau-Brunswick. Il avait célébré son centième anniversaire de naissance, un mois avant sa mort.

Le docteur Godsoe qui avait participé activement aux organisations dentaires, particulièrement au Nouveau-Brunswick, était le seul survivant du groupe de dentistes qui avaient fondé, en 1902, l'Association dentaire canadienne, à Montréal.

QUEBEC

Société dentaire de Montréal. — La Société dentaire de Montréal, sous la présidence du docteur Claude Vachon, aura connu en 1961-62, une autre année exceptionnelle.

La Société, à la fin du mois d'août 1961, organisait son tournoi de golf annuel; l'événement eut lieu au club de Lachute et la nombreuse assistance était un témoignage éloquent du succès remporté par les organisateurs, dont le docteur Roger Grégoire était président.

La première réunion scientifique eut lieu en décembre avec, comme conférencier, le docteur Médéric Robichaud, spécialiste en prothèse partielle fixe. L'assistance nombreuse — plus de 90 confrères — soulignait l'intérêt suscité par cette communication.

En novembre, les réunions conjointes de

Montréal présentaient leur premier conférencier de l'année, le docteur A. McCracken, autorité incontestée en prothèse partielle.

L'année 1961 se clôtura par un cocktail offert au Centre social de l'Université de Montréal où se groupait un très grand nombre de confrères accompagnés de leurs épouses.

La première réunion de 1962 présentait comme conférencier le docteur Marcel B. Archambault qui traita des "Rapports de l'endodontie et de la périodontie".

En février, le docteur Hervé Deschênes présenta une communication sur la dentisterie opératoire. Un vaste auditoire assista à ces deux réunions.

Les réunions conjointes de Montréal avaient comme invité, en mars, le docteur S. Tylman, une des figures les plus connues dans le domaine de la prothèse partielle fixe; plus de 150 confrères étaient présents à cette réunion.

En avril, la Société dentaire de Montréal avait l'honneur d'accueillir à l'Hôtel Queen Elizabeth son Eminence le Cardinal Paul-Emile Léger. Au-delà de cent confrères accompagnés de leurs épouses assistaient à ce dîner-causerie.

L'assemblée de mai était tenue au restaurant Hélène de Champlain. Le docteur Jean-Paul Lussier, vice-doyen de la faculté de chirurgie dentaire de l'Université de Montréal, fit une conférence sur les "Services auxiliaires."

Les élections des membres de l'Exécutif pour 1962-63, tenues à cette occasion, ont donné les résultats suivants: président: Roger Grégoire; 1er vice-président: Jean Guimond; 2ième vice-président: Jacques Fiset; secrétaire: Claude Madore; secrétaire-adjoint: Lucien Latour; trésorier: Clément Vallée; bibliothécaire: Gérard Lussier; conseillers: François Cloutier, Denis Quintal, Viateur Sylvestre, André Paré; aviseur: Claude Vachon.



Photographie prise lors du dîner du Collège des chirurgiens dentistes de la province de Québec, au congrès de l'Association dentaire de la province de Québec, tenu à Chicoutimi, en mai 1962. De gauche à droite: les docteurs Robert LeBlanc, registraire du Collège; Conrad Godin, président de l'Association; Rémy Langlois, président du Collège; Paul Paré, gouverneur du district du Saguenay; et Charles Simard, directeur du congrès et président-élu de l'Association.

Le *Bulletin mensuel* de la Société a paru régulièrement durant les neuf mois de ses activités; le docteur Florent Terriault en était le rédacteur.

Deux initiatives ont caractérisé l'année 1961-62.

A la suggestion du Collège des chirurgiens-dentistes de la province de Québec, des groupes d'étude se sont formés dans dix domaines de la chirurgie dentaire; plus de cent-vingt-cinq membres de la Société se sont réunis en petits groupes, à intervalles fixés à l'avance, pour étudier ensemble la sphère qu'ils avaient choisie. Cette organisation a remporté un très grand succès.

La Société dentaire de Montréal a présenté un mémoire à la Commission royale d'enquête sur les services de santé; ce mémoire fut le seul soumis par un organisme dentaire libre exclusivement de langue française.

Société dentaire de la Mauricie. — La Société dentaire de la Mauricie a élu récemment son Exécutif pour l'année 1962-63. Les nouveaux élus sont: président: Vincent Dontigny; 1er vice-président: Pierre Ringuet; 2ième vice-président: Roger Baribeau; secrétaire: Marcel Lafrenière; trésorier: André Rousseau; publiciste: Guy Boisclair; archivist: Conrad Godin; aviseur: Paul Lacoursière; directeurs: Lucien Picotte, Herman Chatillon, Albini Sirois, Victorin Laliberté, Marc Gobeil, Pierre-André Marchand; président honoraire: Roméo Beaudry.

Chronique internationale

FEDERATION DENTAIRE INTERNATIONALE

Représentants de l'A.D.C. à Cologne. — L'Association dentaire canadienne a nommé ses trois délégués officiels pour la réunion de la Fédération dentaire internationale qui a lieu à Cologne, en juillet. Ces délégués sont James P. Coupland, d'Ottawa, Harvey W. Reid et Don W. Gullett, de Toronto. Plusieurs dentistes canadiens se rendent à ce congrès.

AUSTRALIE

Un adversaire de la fluoration reconnaît ses mérites. — Le conseil de la santé nationale et des recherches médicales d'Australie a changé l'opinion qu'il avait depuis neuf ans et il recommande maintenant la fluoration de l'eau de toutes les villes. En 1953, le Conseil déclarait, qu'avant d'adopter la fluoration, il faudrait que tout le monde l'exige ou, du moins, qu'il n'y ait pas d'opposition.

Le Conseil, au cours d'une réunion tenue récemment, mentionnait que "la fluoration de l'eau de consommation avait produit dans plusieurs pays une réduction marquée de la carie dentaire au sein de la population consommant cette eau et que cette mesure était sans danger; le Conseil recommande aux autorités de songer, le plus tôt possible, à la nécessité de fluorer l'eau de leur aqueduc".

Les Facultés dentaires canadiennes

ÉTUDIANTS DE TORONTO ET DE MONTREAL, GAGNANTS DU CONCOURS DU MEMORIAL DE GUERRE

M. Paul M. Knutson, finissant 1962 de la faculté de chirurgie dentaire de l'Université de Toronto, a gagné le premier prix de \$200 du concours du mémorial de guerre de l'A.D.C. et M. Guy Maranda, de l'Université de Montréal, le deuxième prix de \$100. Le titre du concours était: "Diagnostic précoce des lésions pré-cancéreuses de la cavité buccale." Le concours proposé, tous les ans, aux finissants des facultés dentaires des universités du Canada est organisé par le comité du concours du mémorial de guerre de l'A.D.C. L'argent distribué en prix provient des intérêts d'un fonds souscrit par les dentistes en souvenir de leurs confrères qui ont sacrifié leur vie durant les deux grandes guerres. Chacune des facultés dentaires est invitée à soumettre ses deux meilleurs mémoires au comité qui fait ensuite le choix. Les deux mémoires gagnants seront publiés dans le Journal de l'Association dentaire canadienne.



Stan

Photographie prise à l'Université de Montréal au cours d'une réception en l'honneur du docteur Jean-Paul Lussier, à l'occasion de sa nomination comme doyen de la faculté de chirurgie dentaire.

De gauche à droite: les docteurs Paul Geoffrion, doyen sortant de charge; Jean-Paul Lussier; et Ernest Charron, ancien doyen.

UNIVERSITE DE MONTREAL

Le docteur Jean-Paul Lussier a été nommé doyen.—Le docteur Jean-Paul Lussier a été nommé doyen de la faculté de chirurgie dentaire de l'Université de Montréal. Il succède au docteur Paul Geoffrion, qui conserve son poste de professeur d'orthodontie. Le docteur Lussier était vice-doyen et directeur des études.

Le docteur Lussier a obtenu ses diplômes de B.A., D.D.S. et de M.Sc. à l'Université de Montréal; il a obtenu son Ph.D. de l'Université de Californie. Il est "fellow" du Collège américain des dentistes et membre du Conseil national des recherches. Il est aussi président du conseil d'enseignement dentaire de l'Association dentaire canadienne.

Le docteur Gérard de Montigny nommé secrétaire.—Le docteur Gérard de Montigny a été nommé secrétaire de la faculté; il continue d'agir comme directeur du service d'anesthésie et de chirurgie.

Bourse d'études.—Le docteur Claude Durand, assistant-professeur en périodontie, a obtenu une bourse substantielle du Fund for Dental Education. Le docteur Durand commence, en septembre, un cours de deux ans au New York university qui le mènera à une maîtrise en périodontie.

Nominations à la faculté.—Le personnel enseignant de la faculté accroît le nombre des ses assistants, en septembre prochain: en anesthésie et chirurgie: Coulombe, M.D., (Léo), Bélanger, (Jacques), Chesnay (Gaston), Madore (Claude), Rompré (Jean-Claude); en dentisterie opératoire: Guévremont (Cyrille), Landreveille (Marcel), Robert (Robert); en orthophonie: Huot (Germaine); en pédodontie: Gascon (Pierre), Leblanc (Adélarde); en périodontie: Baril (Gilles), Feinchnneider (Israel); en prothèse complète: Colpron (Jean-Pierre), Côté (Léo); en prothèse partielle fixe: Létourneau (Paul).

Hygiène publique

NOUVELLES DE LA FLUORATION

Le Conseil d'hygiène dentaire de l'Association dentaire américaine a sanctionné une déclaration qui invite les dentistes à prendre l'offensive pour combattre l'attitude anti-

sociale de certains groupes aux desseins obscurs qui nuisent à l'adoption de la fluoruration par les municipalités.

Cette déclaration se lit comme suit: "Il faut combattre le programme anti-social des anti-fluorationnistes; les dentistes et les sociétés dentaires doivent prendre l'offensive, en se servant de tous les moyens possibles pour favoriser l'acceptation de la fluoruration."

La ville de Cornwall, Ontario, selon les nouvelles des journaux, a commencé à fluorurer son eau le 13 février et la réaction des citoyens a été excellente. L'aqueduc de Cornwall dessert environ 43,000 personnes.

Les citoyens de North Bay et des cantons voisins de West Ferris et de Widdifield boivent de l'eau fluorée, depuis le 1er mai. Les citoyens de ces villes se chiffrent à 41,000.

Les villes de Perth (5,700) et de Renfrew (8,461) et les régions du Lac Kirkland et de Streetville (4,850) sont d'autres centres de l'Ontario qui ont installé récemment la fluoruration.

St-Albert, Alberta, fluorure son eau depuis avril 1962. Un referendum, tenu il y a plusieurs mois, a approuvé cette mesure à six contre un.

Les citoyens de Peace River, Alberta, ont voté dans une proportion de 80% en faveur de la fluoruration.

Le Conseil municipal de Tampa, Floride, a voté en faveur de la fluoruration.

Le docteur A. Trendley Dean, 68 ans, un pionnier en recherches sur l'effet de l'eau fluorée sur la santé dentaire, est mort en mai dernier. Les recherches qu'il avait commencées en 1931 lui ont valu plusieurs prix.

Les autorités de Julia, au Vénézuéla, ont décidé de fluorer l'eau provenant du lac Maracaibo et, par la suite, de tous les aqueducs de l'Etat.

Le Corps dentaire royal canadien

DECES DU LIEUT.-COL. P. R. LASALLE

C'est avec regret que nous avons appris la mort subite du lieutenant-col. P. R. LaSalle, D.D.S., survenue le 22 avril dernier, à Montréal. Le lieutenant-col. LaSalle avait quitté le Corps dentaire en septembre 1956, après 17 ans de service. Il était né à Montréal le 29 août 1900 et il avait obtenu son diplôme de l'Université de Montréal en 1925.

Accepté comme officier au Corps dentaire en octobre 1939, il a servi au Canada et au Royaume-Uni. Après la guerre, il a servi dans les Régions militaires de l'Est et du Centre jusqu'en 1949, alors qu'il a été nommé directeur adjoint des Services dentaires au Quartier général de l'Armée. En 1950, il a été promu au grade de lieutenant-colonel et nommé commandant de la 15e Compagnie dentaire à Montréal, poste qu'il a occupé jusqu'au moment de prendre sa retraite en 1956.

A partir de cette date, il avait été employé à Montréal par le Corps dentaire à titre de dentiste civil.

Le lieutenant-col. LaSalle laisse, pour pleurer sa perte, sa femme, Rita, un fils et cinq filles.

DECES DU MAJOR H. H. ROSE

Nous avons également été peinés d'apprendre la mort accidentelle du major Harry H. Rose, D.D.S., quartier-maître de la 50e Unité dentaire (Milice) à Halifax, survenue le 22 avril 1962. Le major Rose est né à Halifax le 6 septembre 1905 et il travaillait à la Compagnie de fournitures dentaires des Maritimes, quand il a été accepté au Corps dentaire comme officier en septembre 1940. Pendant la guerre, il a servi dans les 19e, 9e et 39e Compagnies en qualité de quartier-maître, au Canada et outre-mer. Après sa libération en janvier 1946, il est revenu travailler pour la Compagnie de fournitures dentaires des Maritimes et, en septembre 1948, il s'est enrôlé dans les éléments de Milice du Corps dentaire au grade de capitaine. Il a été promu au grade de major en 1956 et il venait de bénéficier d'une prolongation lui permettant de continuer à servir dans la 50e Unité dentaire, où ses vastes connaissances et son ardeur au travail étaient des plus appréciées.

Le major Rose laisse, pour pleurer sa perte, sa femme, Katherine et deux filles.

COURS SUR LA GUERRE NUCLEAIRE, BIOLOGIQUE ET CHIMIQUE A CAMP BORDEN

Le major T. D. Cobb, d'Edmonton, le capitaine G. R. Myles, d'Ottawa, et le capitaine W. A. Sugars, de la Base de l'A.R.C. à Saint-Hubert, ont suivi le cours sur la guerre

nucléaire, biologique et chimique que le Centre d'instruction du Service de santé des forces armées du Canada au Camp Borden a donné au mois de juin à l'intention des médecins et dentistes.

DES OFFICIERS DE L'ECOLE DU CORPS DENTAIRE PRESENTENT UNE CLINIQUE

Le colonel C. E. Purdy, commandant de l'Ecole du Corps dentaire à Camp Borden, et deux membres de son personnel, le commandeur R. R. Troxel du U. S. Navy Dental Corps, qui est au Canada en vertu de l'accord pour l'échange d'officiers et qui dirige la section de prothèse, ainsi que le major J. M. Smith, ont présenté une clinique sur un programme d'une semaine pour la préparation des auxiliaires dentaires en vue du travail de bureau, clinique donnée au congrès de l'Ontario Dental Association tenu à Toronto le 16 mai. On pouvait y voir, pour la première fois, l'exposition du Corps dentaire portant sur l'instruction des officiers dentistes en vue de leur rôle paramédical dans la survie nationale.

LE LIEUT.-COL. TURNER RESTERA UNE AUTRE ANNEE AVEC LA MARINE AMERICAINE

Le lieutenant-col. J. W. Turner, qui sert depuis un an comme membre du personnel de la U.S. Navy Dental School de Bethesda (Maryland) en vertu d'un accord pour l'échange d'officiers, restera un an de plus à cette école. De son côté, le commandeur R. R. Troxel, du U.S. Navy Dental Corps, con-

tinuera à faire partie du personnel de l'Ecole du Corps dentaire royal Canadien de Camp Borden pendant la même période de temps.

DES OFFICIERS SUIVENT DES COURS AUX ETATS-UNIS

Le lieutenant-col. C. M. Cornish, d'Ottawa, et le lieutenant-col. R. H. G. Cunningham, de la Base de l'A.R.C., à Trenton, ont suivi dernièrement un cours sur la prothèse complète à la U. S. Navy Dental School de Bethesda (Maryland).

ECOLE DU CORPS DENTAIRE

Les officiers dentistes dont les noms apparaissent ci-après ont suivi dernièrement, à l'Ecole du Corps dentaire de Camp Borden, un cours de cinq semaines portant sur le soin des blessés et les soins cliniques, donné à l'intention des officiers:

Major J. A. Lauzière — Base de l'Aviation, Winnipeg (Man.);

Major H. R. Kettlys — Casernes Currie, Calgary (Alb.);

Major P. H. Guèvremont — Base de l'Aviation, Saint-Jean (P.Qué.);

Major D. J. Carmichael — HMCS Naden, Esquimalt (C.-B.);

Major J. McGaughey — HMC Dockyard, Halifax (N.-E.).

L'Ecole a été heureuse d'accueillir deux officiers dentistes américains, qui ont aussi suivi le cours: le major Wallace R. Baze, du Corps dentaire de l'Armée américaine, et le lieutenant-commandeur Henry Muller III, du Corps dentaire de la Marine américaine.

Au service de la profession dentaire • Plus de deux cents dentistes prennent part volontairement au travail des vingt et plus conseils et comités de l'Association dentaire canadienne. D'autres collaborent à ses quatre sections: chirurgie buccale, dentisterie pour les enfants, orthodontie, périodontie.

Recrutement d'étudiants • Sept provinces ont des programmes actifs pour le recrutement d'étudiants en chirurgie dentaire; deux provinces seulement s'occupaient de cette question avant que l'Association dentaire canadienne organise un comité national de recrutement, en 1961.

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Socio-Economic Trends in Health Services

In the following two articles the *Journal of the Canadian Dental Association* presents a penetrating analysis of the forces which shape the future pattern of health care in this country. These papers were read at the Canadian Dental Association's panel on socio-economic aspects of dentistry at the 1962 annual meeting of the Association in Vancouver. These panel discussions on non-scientific aspects of dentistry are a regular feature of the annual meetings of the Canadian Dental Association.

Dr. Malcolm G. Taylor is regarded as Canada's foremost authority on health insurance. Formerly associate professor of Political Science at the University of Toronto, he is now principal of the University of Alberta's Calgary branch.

Mr. A. Andras presents the viewpoint of organized labour. He is director of the Department of Legislation and Government Employees of the Canadian Labour Congress.

Both articles provide a considerable insight into the important issues which shape public attitudes and guide government in this matter. In presenting these papers, the Journal wishes to re-emphasize the need for sustained awareness on the part of every dental practitioner of the aspirations of the Canadian public whose needs we serve.

The Political Economy of Health Care

M. G. TAYLOR,* *Ph.D., Calgary, Alberta*

You have invited me to speak today on a grave and serious topic in the midst of grave and serious times. That you should have incorporated this subject in the program of this great scientific meeting is evidence of your own high assessment of its importance. And although there is insufficient time to deal with it fully, nevertheless, at the conclusion of my remarks I hope you will agree that I have dealt with it both seriously and objectively.

It is a commonplace observation, I know, to say that we live in a world of revolutionary change. It took a half million or more years for man to reach a speed of 15 miles an hour; by the 1840's he had jumped to 40 miles per hour. In 100 years we have leaped to more than 600 miles an hour for normal travel, with 2,000 m.p.h. jets now in sight, not to mention 17,000 m.p.h. for space travel. But this is only a simple illustration of the vast scientific and technological revolution that characterizes our times, and that has placed in our hands, as President Kennedy has said, "the power to abolish all forms of human poverty and to abolish all forms of human life."

As we think about the great forces and events that are shaping our lives in this period of man's upward journey, three major aspects stand out:

1. The scientific and technological revolution is being accompanied by social and economic, and, in many cases, political, revolutions as people endeavour to create and develop the organizational and financial means whereby the fruits of

technology can be made available for the purposes of man.

This world-wide phenomenon has been accelerated by the development of instantaneous means of communication and almost instantaneous means of travel. It has communicated to all people all over the globe a concept of living standards that you and I and a small minority of the people of the world currently enjoy. It has engendered what has been called "the revolution in mass expectations." The great historian, Toynbee, sees this as the central force in our century. He says that this period will be pointed to, not as the time when man discovered nuclear energy and first explored outer space, but as the era in which the less fortunate people of the world first learned what they were missing and demanded more of the good things in life. His guess is that "our age will be remembered . . . as having been the first age since the dawn of history . . . in which people dared to think it practicable to make the benefits of civilization available for the whole human race."

Certain points need to be stressed about this revolution in mass expectations. It is world-wide; it is universal; it is most visibly evident in the new and emerging nations, but it is also present in the west—in the United States, in Canada, in every province. Moreover, it is not only a demand for better material standards of living, but for greater control by people over their own destiny.

2. The second great force shaping our times is the ideological conflict between East and West. And it is a force with which we shall be living a long time. For it is a conflict that cannot be resolved by war, for that would mean annihilation,

* Principal, University of Alberta at Calgary.

and it obviously cannot now be resolved by negotiations. We live, as Walter Lippman has said, between a war that cannot be fought and a peace that cannot be achieved. And yet the threat persists.

There is only one alternative, as Jean Monnet, the great apostle of European unity, has said,

"We cannot build our future, if we are obsessed with fear of Russia. Let us build our own strength and health not against anyone, but for ourselves so that we will become so strong that no one will dare attack us, and so progressive and prosperous that we set a model for all other peoples, indeed for the Russians themselves."

What I want to stress is this: although we are in conflict with Communism, it is not because of this conflict that we should be acting. The things we must do are worthy in themselves; this raising of the standards of life and of living, this creation of a society in which all may share, in which every person may rise to his full potential, these are simply the application of the Judaeo-Christian philosophy that provides the underlying foundation of our democratic way of life. We must act from internal, positive motives, not from external, negative threats.

3. The third great force, always present in the affairs of men, is the great force of change. Change is the law of life.

May I again quote from Toynbee?—

"Change cannot be brought to a halt. To try to halt change is to court an explosion. The constructive way of dealing with the inevitability of change is to make changes voluntarily before they impose themselves. The earlier we take action, the wider will be our range of choice. If we foresee a necessary change soon enough, we shall have some chance of controlling it and of guiding it into channels in which its effects will not be devastating, but constructive."

It may seem almost redundant for me to speak to an audience of health specialists about change. For few people, either as individuals or as groups, have been faced with more change than have those

in the health professions. Many of these changes seem to appear to the professions as possible problems for their positions, their practices, their privileges, and even, some fear, for the independence of their ancient and honourable professions. Evidence of change is revealed by a good deal of comment; by the labelling of government action in the health field as "intervention and interference"; by the opposition that one hears to "lay control of hospitals"; by the denouncing of public health programs as encroachments on the scope of private practitioners. It is also evident in the development of public relations programs by various professional groups as they seek to create new images of themselves in the public mind. These attitudes, actions, and reactions of the health professions suggest that all is not well, or, at least, that some of the leaders of the professions do not believe that all is well, and that many in the health professions do not believe that change is equated with improvement and progress.

If these things are true, they are serious; and they are serious not only for the health professions but for all of us who represent the great pool of potential patients, the public. Now it is probable that the various health professions have encountered different kinds and different amounts of change, but I am certain, even from my brief observation, that the changes faced by the dental profession have not been inconsiderable: changes in the philosophy and content of education, expanding and changing knowledge about the nature of dental disease and defects; the development of new therapeutic and surgical techniques; the gradual acceptance of the necessity to delegate increasing amounts of work to assistants under your direction. And not least, some of you have been faced with the experience of seeing legislative approval given to the sharing of one segment of your previous jurisdiction by a sub-professional group for which only limited qualifications have been required.

In addition, you have become involved in an area of social and political policy

resulting from the questions of whether and of how to apply the newly-discovered scientific technique of fluoridation and have found, to your dismay, that your scientific authority and high and selfless motives have not been universally accepted.

In addition to the technological and professional changes I have mentioned, perhaps even more important changes are those occurring in society itself. The changes in our society affecting the need and the demand for health services are, in part, the result of the transition from a rural, agrarian society, to an urbanized, industrial society. The social consequences are, among others, the shrinking of the family household, a trend to smaller home and apartment dwellings, and, most significant of all, the insecurities of a wage-earning economy.

These changes have reduced greatly the capacity of the family unit to care for illness at home, to pay the costs of serious illness when it strikes, or to weather the strains of long-term illness.

Perhaps even more important is the fact that the sights of the public have been raised to new levels, reflected in a desire not only to have health services personnel available at times of emergencies and death but also to assist in the maintenance of a state of positive health. Similarly, more widespread understanding of the nature and consequence of dental disease has led to a rising public interest in the nature and provision of your services.

I think we can say that the people generally have come to the conclusion that health services are so essential that none can afford to be without them. Or, stating it in another way: the confidence of people in individual practitioners of the health professions was never greater.

If the health professions had really wanted to avoid public interest in them, they should not have made their services indispensable.

But you are not only indispensable; you are also a monopoly because two things—your specialized knowledge and skill, and

compulsory legislation passed at your request—have made you so. The result, like that of any other monopoly that provides an indispensable service, is that dentistry is, as the lawyers say, "clothed with a public interest." And because you have this public service character, the scope of your responsibility extends far beyond the confines of your individual office. You are not simply independent businessmen whose responsibility ends with satisfying only the patients that come to your door.

I think it is obvious that your profession is aware of this responsibility. The most dramatic illustration of your awareness is your endorsement of a policy of fluoridation and your energetic and courageous efforts to have it adopted as public policy. This is a bold, imaginative, creative exercise of professional responsibility of the highest order. And in the history book of human progress, an illustrious chapter will chronicle your contribution.

But since fluoridation will do little for those of us who are now adult, and since its benefits are still denied to the majority of our children, obviously serious problems of providing and financing dental services still remain.

In considering all of these matters arising from scientific, technological, professional and social change, we should be constantly aware—and remind ourselves, when necessary—that, fortunately, the interests of the health professions and those of the people are identical: the objective of making more readily available to those who need them, a constantly rising standard of service.

This complete identity of interest of people and health professions cannot be overstressed. For, too frequently, it is overlooked that it is the patients, and not the professions, who have the greater interest in the quality and availability of health services. One has the impression, occasionally, that professions, like civil servants, and university administrators, sometimes need to be reminded that their major purpose is to serve society, and not vice versa.

It is wholly natural that people are taking a greater interest in the provision of health services. For it is clear that the economic forces of the so-called free market cannot be relied upon to accomplish the whole task. As your Royal Commission brief illustrates, the distribution of dentists, as of physicians, among the provinces of Canada shows a high correlation between per capita wealth and ratio of dentists. Prince Edward Island and Newfoundland are at the bottom and British Columbia and Ontario are at the top. It seems to me that people are coming to the conclusion that only some form of organized public action will achieve anything like the more equitable and satisfactory distribution of resources that is required.

The public is beginning to say, "You have the knowledge and the skill; we have subsidized your education to help provide that knowledge and skill; we have granted you a monopoly to practice; we look to you, therefore, to see that our needs are met."

Moreover, as you know, the interest of the Canadian people in the development of some method or methods by which to budget their health care costs is by no means new. The first Royal Commission to investigate health insurance for Canadians was appointed in this province in 1919. There have been, altogether, ten Royal Commissions or legislative committee inquiries since that time, including one at the national level in 1943-44. Every single one of these, without exception, has approved the adoption of health insurance. And now, a national Royal Commission has been appointed to examine health needs, health resources, and the existing methods of prepaying health care costs, and to present recommendations for the improvement, extension, and financing of services.

Moreover, as you are also aware, a very substantial segment of health care costs was transferred to the public sector of the economy by the passage of the National Hospital Insurance Act in 1957. It is interesting to observe the opposition by cer-

tain health profession groups to the adoption of the National Hospital Insurance Act. And I think we might well examine this question: to what was the opposition directed? Put in its socio-economic perspective, this unanimous decision by representatives in parliament of every political party, by people who must assume political responsibility for the decisions to levy and to spend taxpayers' money, was merely long overdue acceptance of the convictions of the people that more money must be spent on health services to improve public health, and spread the otherwise unpredictable costs of hospital care. The objective was to make available to all what Blue Cross had proved was good for many.

May I, at this point, offer a warning about a matter that is of grave concern? I am alarmed at the number of otherwise responsible leaders who seem unaware of the damage they do as they try to create a distinction between the government and the people, and speak of the government as some remote, alien force. This simply reveals a naïve attitude to, or perhaps even complete ignorance of, the realities of the democratic process. Nothing could play more strongly into the hands of the Communists. For the people who turn to totalitarian régimes are those who have lost faith in their capacity for self-government or in the possibility of attaining their legitimate aspirations through the democratic process. Constructive criticism of government policy or proposed policy is absolutely essential, for wisdom and vigilance are the price of liberty; but we must not criticize in such a way as to make a mockery of the democratic system and undermine our confidence in our ability to govern ourselves.

I think it fair to conclude that when various people charge that the proposals for national health insurance come only from opportunistic politicians competing for votes, they are misreading the symptoms, being superficial in their diagnosis, doing the health professions as well as potential patients a disservice, and, in the

long run, giving aid and comfort to our international competitors.

Now I know that the dental profession faces especially difficult problems. One fact stands out, there are simply not enough of you. So overwhelming is the need for dental care and treatment that, unless we achieve some major breakthrough in dental research to meet the needs of the present generation or achieve universal adoption of fluoridation for the generations to come, dental needs will remain our number one health problem for a very long time. You are certainly one profession that knows it will never suffer economically from technological unemployment.

There is no question that the public is looking to you for leadership. What is needed, it seems to me, is for the health professions to accept more generally that the provision of health care in this day and age is a complex problem, requiring for its solution contributions from the fields of finance, large scale organization, and administration. Second, there needs to be a more general acceptance of the proposition that in a democratic society, the people have a right to participate in the decisions on matters that affect them as directly as do health services and the payment for them.

It is essential that all concerned come together in a spirit of mutual trust and confidence, and with an awareness that all parties have the same objective: better health care, made more readily available. Given the necessary leadership and guidance by the professions, and their awareness of the inevitability of change, it would seem to me to be unthinkable for the public to take any step not in the interests of the health professions. For nothing is so obvious than that the quality and availability of health care depend upon recruiting into the professions every year an increasing number of men and women of the calibre, with the qualities of mind and heart, of the members of this audience. That means that dentistry and medicine and nursing as careers must become even more attrac-

tive. Young people cannot be dragooned; they must be attracted.

I would not have you believe that I think there are no potential dangers to professional men if and when the public organizes through its government agencies to meet its objectives and aspirations. Certainly, my years as consultant to the Canadian Medical Association impressed deeply upon me the need for a clear enunciation of principles and conditions to which a profession must steadfastly adhere.

In recent years, moreover, I have become increasingly aware of what I consider to be, next to the international threat, perhaps the central issue of our time. It is this: How do the creative groups in our large scale, impersonal society—the professions, the artists, the writers, the academicians, the scientists—maintain their essential freedom to be creative as more and more of the funds for the support of their functions come from public sources?

In a tour that I made of universities in the United States, Europe, and the United Kingdom, this question was never absent. Even the great private universities of Harvard, Yale, and Oxford are deeply concerned about the increasing proportion of their revenue coming from governments.

We must neither minimize nor exaggerate the dangers, and we must not substitute emotion for reason. We must analyse our respective situations, and be certain that we know what the essential requisites of our freedom are. My fear is that we may fight on the wrong issues.

Moreover, we must constantly remind the public of their fundamental and continuing interest in our freedom. For freedom is indivisible. Academic freedom is essential not only for the professors but for the society. Freedom of the press is essential not only for reporters and editors but for the society. Freedom for the health professions is essential not only for practitioners but for patients and society generally. And, of course, with

such freedom there is a concomitant responsibility.

May I summarize my views as follows?

As I read the signs for the future development of health services in Canada, the people are saying, "You, the health professions, have developed the art and science of healing to the point of quality where it is indispensable. We, the people for whom the health services exist, have come to the conclusion that it is time to spend more money and to establish or expand the organizational arrangements to make higher quality services more readily available to all."

This is, at once, an unprecedented vote of confidence in you, and an unprecedented challenge to you. How will you and the other health professions meet this challenge?

Will the professions meet it negatively, as if they were fighting a rear-guard action to preserve ancient privilege? Will they meet it with the ammunition of the propagandist, the emotion-packed but meaningless slogans of "creeping socialism," "regimentation," "welfare state," "political dentistry," "deterioration of quality," "state medicine"?

Surely the issues, the problems, and the times are far too serious for such a superficial approach.

Or, will the health professions meet the challenge positively on the national and provincial levels with the same vision that they have exemplified in their professional work, remembering that where

there is no vision, the people perish? The fundamental issue in the long run is this: Will the health professions meet with the elected representatives of the people when and if asked to do so, in a spirit of co-operation to help meet the legitimate aspirations of the people in a democratic way, in a democratic society? I think it a truism to say that in the long run the will of the people must prevail.

Will they make their will prevail with your guidance or without it? The results can be magnificent if you are directly involved; they can be unfortunate if you abdicate.

I would say to you from my limited experience in this field, that I am confident of the results and in the leadership that you will give. You brought humanitarian motives and intelligence into this great profession. They are themselves sufficient guarantee that you can work in harmony with the forces I have mentioned. I believe that you and the other professions will rise above the petty irritations, the unwarranted fears, the cries of the alarmists and those of myopic view. I believe that your profession and the other health professions will see in this period of democracy's greatest trial as a way of life, a great and unprecedented opportunity to provide improving standards of health care under conditions that are mutually advantageous to you and the people. Let this be a time for leadership in the land!

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C.D.A. Attitude on Dental Insurance • While opposing a comprehensive treatment program "at this time," the Association lists the following conditions which should apply in the event of inauguration of such a plan: (1) intensive dental health education of the public should precede and accompany a treatment program; (2) the age groups to be included should be determined by initial and annual assessments of the people's needs and of the dental personnel and funds available; (3) treatment should be provided by dentists in private practice, on a fee-for-service basis according to an acceptable fee schedule; (4) dentists should be free to participate or not; (5) the rights of patients and dentists to select each other should be protected; and (6) administration should be effected by profession-sponsored dental service corporations. — C.D.A. Brief to the Royal Commission on Health Services.

Labour Looks at Health Care

A. ANDRAS,* *Ottawa, Ontario*

It is a self-evident proposition that if organized labour looks at health care at all, it does so through the eyes of the consumer. Its view moreover will be influenced by two factors. One of these is its own awareness of the expectations of its members who are part of what has been described as an affluent society. The other is its long and not inconsequential experience with private plans in an effort to provide its members with protection against the consequences of ill health. Both of these have led organized labour to the conclusion that the status-quo in health care is unsatisfactory and that something more far-reaching is needed.

Whether Canada now enjoys the second highest standard of living in the world or the third is immaterial. The fact that this relatively high economic level may mask a considerable amount of poverty is also beside the point. What must be borne in mind is that Canadians by and large are living in a country which is highly industrialized, and in which the satisfaction of material wants is a strong motivating force in every social and economic stratum. Accordingly, workers no less than other members of our society, seek those satisfactions which are the criteria of a good standard of living. In large measure, these include the accumulation of durable goods, an abundance of leisure and the opportunity to use goods and leisure for a fuller life.

In this context of the relationship between a highly developed technology and a high standard of living, the role of health cannot be overlooked. Here again, there are two factors which require com-

ment. One of these is the very great progress which has been made in the field of health care during the last generation. The other is the assumption on the part of most people that good health is part of a good standard of living. In this connection, good health would imply not only the availability of necessary services but their availability without any financial barrier.

It was inevitable that the sweeping advances made on almost all fronts in the field of health care should lead to the feeling on the part of most people that these advances should be theirs to enjoy. It would have run counter to all our egalitarian feelings to have permitted the fruits of scientific research to be preserved only for the well-to-do. In point of fact, of course, this has not been the case. In keeping with the traditions of science and of medicine, every advance in knowledge has been made widely available. But financial barriers still remain between the would-be user of this new knowledge and that knowledge itself.

The rising standard of living which has been a feature of Canadian life over a long period of time has also resulted in a rising expectation as to the opportunities for good health. There is a close relationship between the type of economy and the attitudes toward health care of the people in it. In our own economy, one marked by rapid technological advance and consumer orientation, the relationship is a very close one. In the eyes of the Canadian people, good health is part and parcel of a good standard of living. But this attitude is distorted by the sheer unpredictability of illness and the fact that for most people it is difficult if not impossible to budget for it successfully through their own means.

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Organized labour came face to face with the problem of health care when, during and after the second world war, it began to engage in collective bargaining for the so-called fringe benefits. Among these were prepayment plans to provide protection against a variety of contingencies including ill health. Trade unions, and employers, were confronted by a multiplicity of plans, all anxious to sell protection for a price. Some of these were sponsored by the medical profession itself and others by the commercial insurance carriers. The trade unions soon discovered that there was a wide range in the quality of these plans. Some were able to offer a relatively comprehensive range of medical services. Others were quite limited in scope. But in either case the forces of the market place were at work. All too often, the better plans were beyond the reach of union members while the inferior ones simply did not do what was required of them, which was to provide adequate protection against the high cost of illness and accident. As the unions discovered, the insurance principle in group coverage was at work not for the protection of the would-be beneficiary but simply in order to safeguard the underwriters' interest.

The private plans have failed significantly to do what one might justifiably have expected of them, namely, the ability to cover the costs of health care for their subscribers. Perhaps this is an unfair accusation. Possibly it would be more correct to say that they were never intended to do this, that the best they had to offer was a relatively wide range of services within a limited field of health care. This has been the case, for example, with the so-called comprehensive plans sponsored by the medical profession in the various provinces. As far as the commercial insurance plans are concerned, this situation has been even less satisfactory. By and large, the plans have suffered from exclusions, exceptions, waiting periods and other limitations. It need hardly be stressed to an audience such as this that one of the more glaring deficiencies

in the private plans across Canada has been the omission of dental care.

The Canadian Sickness Survey pointed out in no uncertain terms the fact that a great many Canadians were not getting the health care that they required. Some were getting none at all; others were getting too little. There was an obvious relationship between income and membership in the prepayment plans; those with the lowest incomes showed the lowest rate of participation. The failure of vast numbers of Canadians to get proper dental care was one of the most striking findings of the Survey.

But it did not require a sickness survey to underline other facts about health in Canada. There was, and remains, a severe shortage of health care practitioners: more particularly dentists, nurses and other medical and paramedical personnel. There is a shortage of facilities. What resources there are suffer from maldistribution. There has been a long-term trend toward concentration in the larger urban centres, especially on the part of specialists, with the result that considerable areas are under-doctored and otherwise without ready access to care.

The experience of the labour movement with respect to the status-quo in health care has thus been as follows: (1) many Canadians have not been able to obtain good health care except at a very considerable financial sacrifice if they obtained it at all; (2) group prepayment plans have failed to cover more than a relatively small portion of the total health care bills of their subscribers; and (3) the present structure of health care was such that it could not provide adequate care for the Canadian people. The labour movement could not help but observe, furthermore, that Canada was one of the few remaining countries with an industrial, urbanized technology which still relied on health care services conducted largely as a private enterprise. One important modification of this, of course, has been the advent of hospital insurance across Canada.

Organized labour has come to the con-

clusion, on the basis of these observations, that far-reaching changes would have to be made before adequate health care would be available to all Canadians. My own organization, the Canadian Labour Congress, has advocated a public health care program in the belief that only through such a program can the health needs of the Canadian people be properly looked after. In brief outline, the position taken is as follows:

1. Such a public health care program should be comprehensive in scope, that is, it should provide health care in the fullest sense of the term. Services should include the prevention, diagnosis and treatment of illness, the rehabilitation of those disabled by illness or accident, and the provision of drugs and appliances.

2. The program should be universally available without regard to means.

3. It should provide health care of the highest quality.

4. It should be equitably financed, free of any co-insurance, deductibles or other financial deterrents against full use.

5. It should be organized to provide optimum distribution and co-ordination of the various types of health services, agencies and personnel.

6. It should take the necessary steps to fill existing needs in health care personnel, professional as well as technical, and facilities to make comprehensive health care available in every part of Canada.

7. Its administration should preclude control or undue influence by any interest group; it should include an appeals procedure; and it should provide for an advisory council as part of its administrative structure, such council being representative of the interests of those who use as well as those who provide the health care services.

The foregoing concept of a public health care program is undoubtedly influenced not only by our own experience here in Canada but by the history and development of health care programs in other countries. It has been influenced as well by the definition of good health which has been laid down by the World Health Organization: "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." It may be argued that this definition goes far beyond health care. This is not disputed. Quite obviously, if good health is to be considered as a positive value, it will take more than an efficient and pervasive health care program to provide it. Some far-reaching environmental changes will have to take place as well. Organized labour is well aware of that, and argues that important social changes must be carried out on a number of fronts. But, basically, good health care must rely on good health facilities.

It is important to stress the fact that the kind of health care program envisaged by organized labour is one comprehensive in character, that is, it should provide the whole range of health care services, including the physician, the dentist, the nurse, the physiotherapist, the medical social worker and other health care personnel. In the words of Lord Beveridge, "A comprehensive national health service will ensure that for every citizen there is available whatever medical treatment he requires, in whatever form he requires it, domiciliary or institutional, general, specialist or consultant, and will ensure also the provision of dental, ophthalmic and surgical appliances, nursing and midwifery and rehabilitation after accidents." (For obvious reasons, midwifery need not be considered in the Canadian context of health care.)

It is important also to bear in mind that organized labour does not consider the prepayment mechanism by itself a satisfactory solution to the health care needs of the Canadian people. Without denying in any way the value of the prepayment plans and of their ability to bring a

measure of protection to many Canadians, prepayment by itself is not good enough. It is merely a convenient technique for the budgeting of some health care costs. It cannot of itself assure the people of this country that they will get the services they need, when and in the amount that they need them. To consider the health needs of the Canadian people as though all that is required is the universal application of a premium payment is to ignore the deficiencies in our existing health care structure. The prepayment mechanism is no substitute for a well organized program of health care of high quality. With respect to dental care, as I have already observed, prepayment has not even begun to make a contribution.

The private plans have played a useful role and in many respects a pioneering one in freeing many Canadians from the fear of the mounting costs of at least some of their medical expenses. But once this has been said, there is not much more that can be said in their favour. They suffer from overlapping and duplication, hence unnecessarily high costs. Such plans are limited almost entirely to diagnostic and curative services. They do very little in the fields of prevention and rehabilitation.

They do not make readily available even the kinds of services which are associated in the public mind with them. They abound in exclusions and restrictions. They leave untouched large areas of costs which the subscriber is compelled to cover through his own resources. They cannot undertake to guarantee the provision of a service or of a facility, nor the proper co-ordination of services. They merely cover a cost of part of it directly or indirectly. They do not engage in research or education. They are not readily amenable to public scrutiny and control. Last but not least, they are not concerned with the quality of the care which they underwrite. These reasons, and particularly the last one, are in the minds of organized labour sufficient to render the prepayment plans unsuitable as media

through which the health needs of the Canadian people should be looked after.

To add, as it were, insult to injury, the proposal has been made not only that it would be quite adequate merely to extend the existing patchwork of prepayment plans to cover all Canadians but that this should be accomplished by a wide-spread extension of the means test. Realizing quite correctly that a very considerable number of people would not be able to pay the premium required for coverage, the proponents of this proposal have suggested that the government pay the premium on behalf of the group which for the purposes of such coverage would be deemed indigent and that this be done on the basis of need. Organized labour has taken very strong exception to this suggestion. It has done so partly because it has no faith in the ability of the private plans to do the job that needs to be done, partly because it is resolutely opposed to a measure which would subject large numbers of self-respecting Canadians to the ordeal of a means test in order to get necessary health care. Organized labour has taken strong exception to the idea that a very significant part of the population should be exposed more or less permanently to the means test procedure in order to have access to a fundamental type of social security. In its view, the means test should play a peripheral rather than a large role in any social security system and to move it into a relatively strong position, as has been suggested, is to create in effect a caste system among Canadians where health care is concerned. This is not to be tolerated.

But it is not merely the negative aspects of the existing plans nor the defects in our health care resources that have prompted organized labour to look for an alternative. A public health care program such as it sponsors has advantages which are not easily to be set aside. One of these is that a public program, properly planned and executed, would make health care available to everyone without regard to means, location, occupation, present state

of health, age and other such factors which at one time or another or in one form or another now create a barrier between the would-be user of a health service and those who would provide it. Only a public program, subsisting on public funds, can hope to command the resources and to engage in the planning which are basic to a comprehensive program of health care. It must be very plain that no private institution can have either the resources or the authority to finance, to plan and to administer a comprehensive program of health care such as I have just described. Government alone is able to establish fiscal policies which would make possible the financing of a public program on an equitable basis. If such a program is to include the whole population, it would be far-fetched to believe that a measure of such dimensions could be delegated to private agencies and the expenditure of public funds entrusted to sectional interests. It is worth noting that in no province has the legislature entrusted to private agencies the control and administration of its hospital insurance plan. Yet here if anywhere there had existed well established agencies with a long and useful experience.

There have been expressions of pious horror that government should enter the field of health care. It is conveniently forgotten — or ignored — that government has been in this field for years: in preventive services, in tuberculosis and mental illness treatment, in grants-in-aid, and so on. It is further forgotten that government administration is merely a way through which people undertake to do collectively what they find difficult or impossible to do otherwise. Hence our public school system, our public water supply, our public roads and highways, and other examples too numerous to mention. The opponents of a public program frequently overlook, moreover, the extent to which the ability of private enterprise health care to exist rests on government-subsidized or financed educational and research facilities. However costly a medical edu-

cation may be, for example, it would be much more so if the student or his parents had to pay the real cost of his university tuition.

In its zeal for a public health care program, organized labour has obviously upset some of the sacred cows in the health care field. The very mention of a public program is one of them but perhaps not the most important. In as little as two years, the Canadian Labour Congress has ceased to be a lone voice crying in the wilderness. It has been joined in its demand for a public program by other eminent and responsible, not to say respectable, organizations, so that there is a much broader demand for a public program than has been the case before. There is general agreement, furthermore, that there should be universality of coverage and here again the Congress is in good company. I refer more specifically to labour's opposition to the fee-for-service system of payment and to the change from the relatively hit-and-miss method of the distribution of health care services that now prevail to a more orderly one.

Why is the question of the method of remuneration so important to organized labour? Its importance lies in the effect it has on the kind of health care that is provided. It is clear that a system of payment which relies on a fee for each episode of care will tend to focus on diagnosis and treatment and take on a quantitative rather than a qualitative approach. The effect has been to make preventive care one of the neglected fields of health insofar as the private practitioner is concerned. It has been suggested by Dr. Franz Goldmann that a comprehensive program is one which provides "inclusive-ness and continuity of service through the stages of health or apparent health, acute illness, convalescence and prolonged illness, whether disabling or not." Organized labour feels that a system of payment which focuses on treatment is bound to fall short of such inclusiveness and inevitably make its appearance only when health or apparent health has given way to illness. This is not said in condemna-

tion of the private practitioner. It is a criticism of the structure itself which has resulted in an emphasis on one part of health care, however important, and in the neglect of others. It is for this reason that organized labour, or at any rate the Canadian Labour Congress, has espoused the salary system of remuneration for the physician and for the dentist. (In the case of other medical and paramedical personnel, the salary system is already so much in effect that there is no problem in this regard.) The rationale for the salary system, therefore, is that it will remove the atomized, piecework approach to health care which now prevails both in medicine and in dentistry, change the incentive from one which is basically financial to one which is much more authentically professional, transfer attention from quantity to quality and make possible unity in health care where it is now fragmented.

It is important for the practitioner to make a good living. He is entitled to it and it should not be necessary to justify it here. But it is just as important that his economic survival should not be his major preoccupation. Yet the fee-for-service is bound to cause precisely this. Organized labour believes that the primary concern of the practitioner should be the well-being of his patients and that his own economic well-being should be something he should be able to take for granted. We wish to see removed as much as possible the economic incentives which might motivate the medical or dental practitioner and see strengthened the already strong motivations to provide a good service.

You will have noted the reference to quality in this address. I wish to make it clear that the term does not refer exclusively to the technical or professional competence of the practitioner. If that were the sole criterion of quality, there would probably be little cause for complaint by organized labour or by others. There is no disputing the fact that Canadian physicians, dentists and other medical and paramedical personnel are able and well trained. But to say this is not to concede that the health care now received

by Canadians is of a high quality. Accordingly, what does quality connote? In the opinion of organized labour, and, it might be added, others who are probably accepted more readily as authoritative spokesmen on this subject, quality involves not only the education and skill of health care personnel but the assurance that there are enough of them to provide the necessary services and they are so distributed as to be available and accessible where they are needed and not clustered in a few metropolitan areas. Quality, therefore, includes "territorial justice." It includes also a sufficiency of the facilities that are required for good health care, including properly equipped offices, hospitals, clinics, laboratories, pharmacies, and the like. Beyond that, it includes the proper organization of resources for their optimum use. It includes also methods of payment to cover services which, while providing an adequate income to the practitioner, do not impose an impossible burden on those who must bear the cost. Finally, quality in health care involves education of the public and of the practitioner in what is essentially a partnership for the promotion of the public well-being. It seem superfluous to add that a program that provides high quality of care must rest on an active and well financed and staffed program of research.

In examining the concept of quality, organized labour has tended to develop a preference for the group practice of medicine rather than for the traditional solo practice. It has become convinced that only through medical teamwork, through the effective co-operation of the generalist and the specialist, can the great body of knowledge now available be effectively brought to bear on the health needs of our people.

If quality as well as universal availability are to be the objectives, they cannot be achieved through the present pace of evolution in the field of health care in Canada, at least not in the foreseeable future. Health care at present is fragmented, to a large extent unco-ordinated,

divided among many jurisdictions both public and private, without any well defined system of priorities, and without any concerted effort to effect a necessary alteration in the supply and distribution of resources. In the view of organized labour, a public health care program is the answer.

The Canadian Labour Congress has advocated that such a program be administered by the provinces through a federal grants-in-aid program, similar to the one which exists already in the case of hospital insurance. It has suggested further that this program be developed in two stages, the first providing medical care both general and specialist, and various diagnostic and special therapeutic services. It should also include the services of the nurse, the practical nurse, the therapist and the social worker. As part of the first stage, preventive dental care for children is also envisaged. The second stage, to be introduced not later than five years from the first, should include full scale dental care and the provision of drugs and appliances.

The question inevitably arises as to how all this is to be paid for. In some quarters the impression has been given that a public health care program such as labour has advocated would result in a sudden and violent inflation of costs. What is comfortably forgotten is that the Canadian people are already spending very considerable sums on health care, privately through direct payment, collectively through group insurance, and through tax supported public programs. In very large measure, therefore, inauguration of a public program would be not so much a problem of finding "new" money to pay for it all but of effecting a more equitable redistribution of the funds that are already being spent. Where some now pay too much and some too little, some semblance of balance would be established. Services would be available on the basis of need and financing would be made on the basis of ability to pay. Admittedly, there would be some increase in total costs since many people now not getting medical care would be getting it and this

would have to be paid for. But by and large, there is evidence as to indicate that the cost would not be materially different from what it is now.

Some reference should be made to the right of the professional practitioner to control his professional standard. There is certainly no thought in the mind of labour that any body, government or otherwise, should intervene between the practitioner and his patient insofar as the clinical aspects of their relationship is concerned. Further, professional standards can be set by the profession alone and by its teaching agencies. No one else is competent to do so. Whatever program may be introduced, this must be taken for granted. It is sheer nonsense to suggest that third-party intervention, in this instance by a public agency, will do damage to the physician-patient or dentist-patient relationship. The already considerable third-party intervention by private agencies — commercial as well as non-profit plans — makes this quite clear. What government planning, finances and resources will do is to enhance the professions by giving them a better environment in which to practise.

I have spoken in rather broad terms because the subject seems to call for such treatment in a relatively limited period of time. Perhaps I should have confined myself more closely to the role of the dentist. I do not think so. The dentist is one in the team of health care practitioners. He must fall into line with his fellows in making for a comprehensive program of health care for all Canadians. It is to the credit of your profession that it has shown mounting anxiety as to the prospects in its particular field of work. Your brief to the Royal Commission on Health Services contains abundant evidence of that concern. But the organized profession is open to criticism on at least two counts. It has shown little apparent interest in developing some system of prepayment so that dental care might be more readily, that is, financially, accessible to some

groups than it is now. It has remained virtually silent, judging from the brief itself, on the need for, prospects and implications of a public health care program in which dentists must inevitably be involved.

Organized labour is firmly convinced that a public health care program is not so much a question of whether but of when it will begin. Canada cannot for long

withstand the strong social and economic forces which have brought such a program to every other western country, except for the United States where it is even now a matter of public issue. A public program is an inevitable event for Canada. It would be well for the health professions to face up to it and meet it half-way.

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Pressure Amalgamation

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The basic fundamentals in the manufacture of silver amalgam alloys, the distillation of mercury, and the preparation and insertion of amalgam into prepared cavities are well known. However, some beliefs concerning various phases of cavity preparation, the preparation of alloy and mercury and the resultant restoration are being questioned.¹

The following paper may lead to a better understanding of what we are accomplishing clinically with amalgam restorations, and, perhaps, methods to improve them.

PREPARATION OF ALLOY AND MERCURY

Trituration is the mixing together of mercury and alloy filings. This results, under proper conditions, in a plastic mass.

The combining of a metal, mercury, that is liquid at room temperature, with a solid,

the alloy filings, produces a solidification process. The resulting mass has a melting point well above the range of mouth temperatures.² In very simple terms this is essentially what occurs in the everyday procedure of inserting an amalgam filling.

As the mercury is brought into frictional contact with alloy particles, the mercury removes the surface from these particles and reduces their size. The surface of the alloy particles combines with the mercury by a series of reactions and forms a binder for the remaining alloy particles. It is essentially this binder we are attempting to homogenize by trituration into a plastic, workable mass. The remaining alloy particles are enmeshed in this binder and their eventual concentration determines whether the restoration will have the maximum in physical properties or not.

Inability to work this binder into its proper state has led to the incorporation of excess mercury into the mix in order to accelerate this procedure. The main problem with a high mercury to alloy ratio in the mix is that it results in more

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mercury than required in the finished restoration.

The most desirable features of a trituration process based on the above reasoning would be:

1. A method to bring mercury and alloy together in the correct proportion by a simple procedure.

2. At the time this is done, the removal of any excess mercury should be accomplished.

3. An efficient instrument to work the binder into a homogeneous plastic mass ready for condensation in as few seconds as possible; i.e. an instrument that could simulate rapid hand mulling.

4. A prepared amalgam mass that would be easier to condense for a longer period of time.

The mechanical amalgamators in common use today accomplish this by a prolonged trituration time. This results in several disadvantages:

1. An initial, rapid, brittle, setting stage.
2. Difficulty in condensing due to the dry, resistant nature of the mass.
3. Too short a working time for the average dentist.
4. Difficulty in carving.

It would appear that we have been employing methods to prepare amalgam for condensation that make it increasingly difficult to produce a restoration with: (1) low residual mercury content (2) high compressive strength (3) minimal flow (4) functional anatomy and surface density. Instead of finding the simplest way to accomplish this, we have developed a series of steps that make it more difficult.

Let us consider the different ways of accomplishing amalgamation:

1. Mortar and Pestle

This is the oldest, and from many a practising dentist's point of view, still the best way to prepare alloy and mercury for insertion into a prepared cavity. This manual method is under control of the operator from the point of view of consistency, appearance, etc. However, it is time-consuming and not compatible with today's efficient office procedures.

2. Mechanical Amalgamators

These are of two types (essentially):

- (a) A high-speed vibrating capsule and metallic or plastic piston or steel ball.

- (b) A slow-speed vibrating capsule and metallic or plastic piston or steel ball.

From the point of view of convenience, these have been a great help to the profession. Once the timer is set, the same quantity can be prepared consistently with the same characteristics in less time than by the manual method.

Recently a new experimental model has been developed. This vibrates a capsule with considerable force in a vertical direction, then accelerates quickly and expels the excess mercury.*

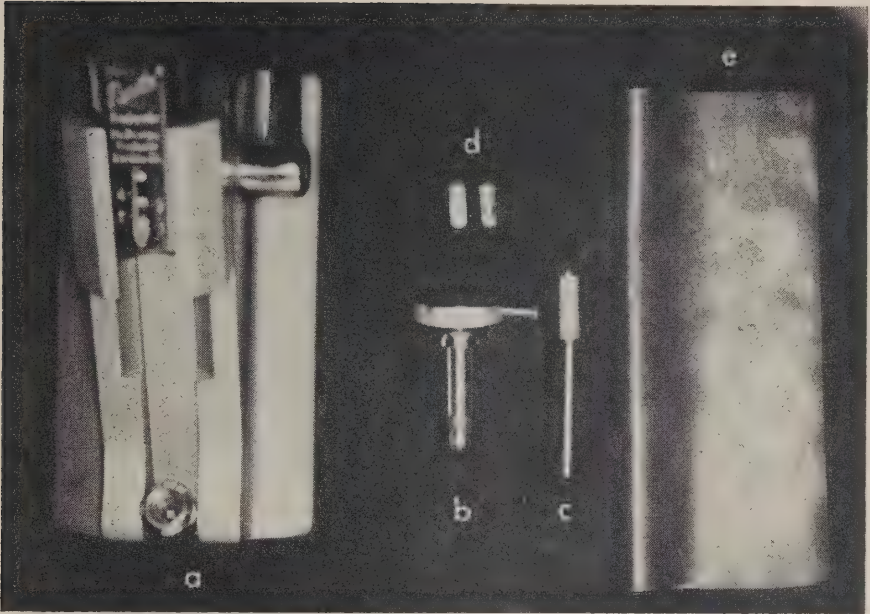
3. Pressure Amalgamation

In the last two years the writer has tested a new device† that uses pressure for the amalgamation of mercury and alloy. Preliminary laboratory tests compared favourably with standard techniques.^{3,4} The clinical results to date have also been very satisfactory.

The fact that this initial procedure does not employ customary trituration, opens up a new avenue for investigation.

*American Dental Mfg. Company.

†Presto amalgamator, McShirley Products.



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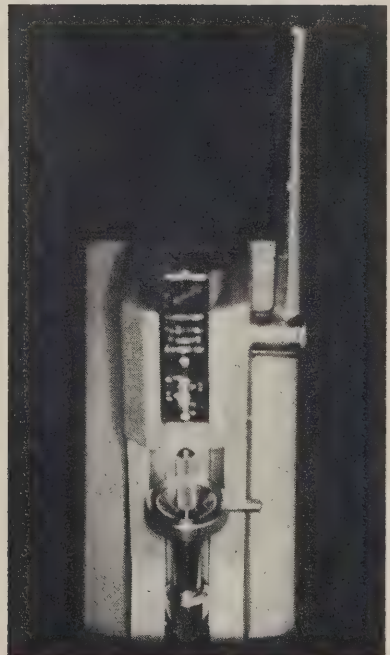


FIGURE 1 (a) The base containing the pressure device and ball seat for the cylinder. (b) Cylinder. (c) Piston. (d) Capsules of alloy and mercury. (e) Rubber dam.

FIGURE 2 The cylinder in place, followed by mercury, alloy and piston in that order.

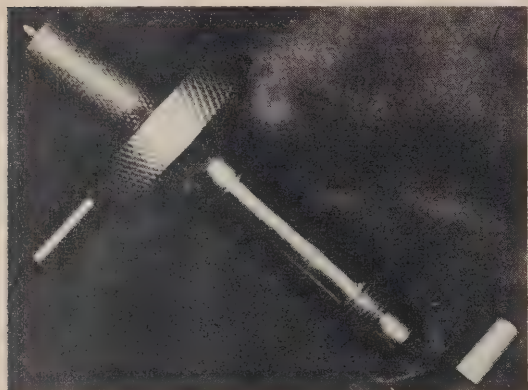


FIGURE 3 The cylinder unscrewed from the base after an interval of pressure, and the resulting pellet of alloy and mercury released from the cylinder by pressure on the piston head.



FIGURE 4 The piston removed from the cylinder allowing the excess mercury collected in the well to be released.

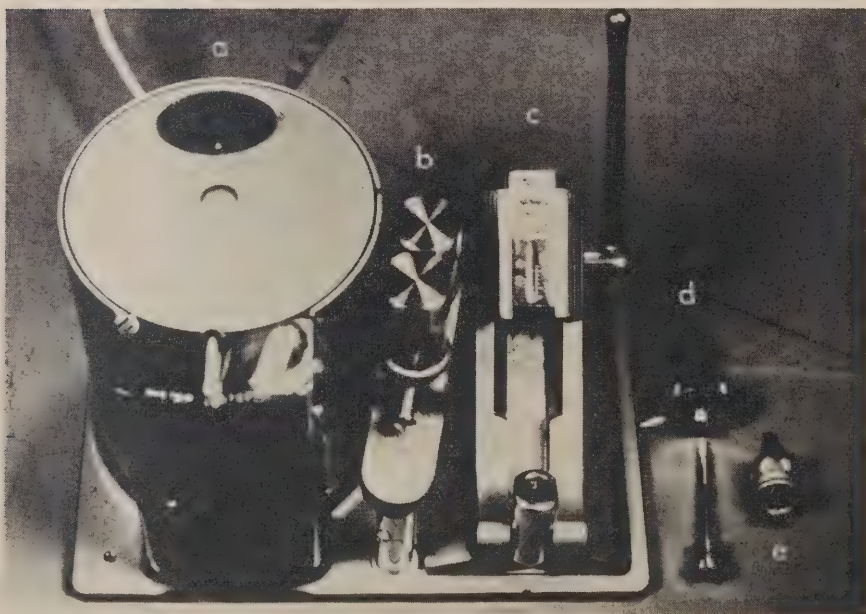


FIGURE 5 The modified unit. (a) The mulling device. (b) Mercury and alloy dispenser. (c) The press. (d) The piston and cylinder. (e) The pear-shaped cup showing depressions.

The original model (Figure 1) consisted of a removable cylinder and accurately fitted piston. The cylinder screwed into the base and seated against a steel ball forming a seal. This assembly could be moved into position under a powerful spring and hand lever with a gauge calibrated from 1 to 4 (Figure 2). The piston had a cut out section or well in the rod about 10 mm. from the end.

Until recently the most convenient packaging of the preferred alloy* was in capsules containing mercury, 12 grains and alloy, 8 grains.

The cylinder was screwed home securely. A capsule of mercury was put in first and the alloy capsule followed. The piston was inserted after any alloy particles had been brushed down into the cylinder. Firm hand pressure on the piston head to seat it was desirable initially.

The assembly was tipped into position and the lever brought forward quickly to the desired number on the gauge. It was held at this point for ten seconds. This sustained pressure caused the alloy to be passed through the mercury. At the same time, the excess mercury was expelled up the sides of the piston and collected in the cut out section or well of the piston rod.

By selecting a higher number on the indicator (2.5 minimum), more mercury was expelled, resulting in a drier prepared amalgam with less mercury in the initial mass.

After ten seconds the pressure was released and the piston left in place. Then the cylinder (and contained piston) was unscrewed. Finally, by applying hand pressure to the piston head, a cylindrical pellet of the prepared alloy and mercury (Figure 3) was ejected onto a sheet of rubber dam for 10-15 seconds of hand mulling, or into the capsule of a mechanical amalgamator for several seconds of mechanical mulling. The piston rod was then withdrawn in the opposite direction and the excess mercury allowed to escape from the well, free of the prepared amalgam (Figure 4).

The technique here described was a very simple procedure, notwithstanding the detailed description given.

Recently the original pressure amalgamator has been modified. An alloy and mercury dispenser and an electrical mulling device have been added to speed up the procedure and to make it more generally acceptable. A mix can now be dispensed, compressed, excess mercury removed and mulled in 5 to 7 seconds (Figure 5).

The pressure device remains essentially unchanged except for a smoother running piston, a slightly larger cylinder more easily secured to the base, and a larger piston head.

A mercury and alloy dispenser is provided that swings into position and places the alloy and mercury into the cylinder (Figure 6). When pressure is applied to the piston, the latter is held for two seconds at the number selected on the gauge (Figure 7). The assembly is removed from the base and the amalgam is ready for mulling.

The muller is a motor driven disk that orbits a pear-shaped cup at considerable speed. This cup has several depressions around its widest portion.

The prepared alloy and mercury are placed in the cup and the motor switched on. At the same instant, a small light near the switch blinks each second so that timing the mix is no problem (Figure 8).

The disk spins in one direction and the pear-shaped cup turns in the opposite direction. The centrifugal force developed by the spinning disk hurls the prepared amalgam across the pear-shaped cup into the various depressions or pockets at a tremendous rate. This simulates a process of rapid, heavy, hand mulling.

The mass is continually deformed, re-shaped and thoroughly mulled. By this efficient process we develop the binder formed between the surface of the alloy particles and the mercury into an ideal plastic consistency, giving the appearance, when removed from the cup, of an amalgam mass with excess mercury.

*Presto Special Alloy, Hammond Dental Mfg. Co.

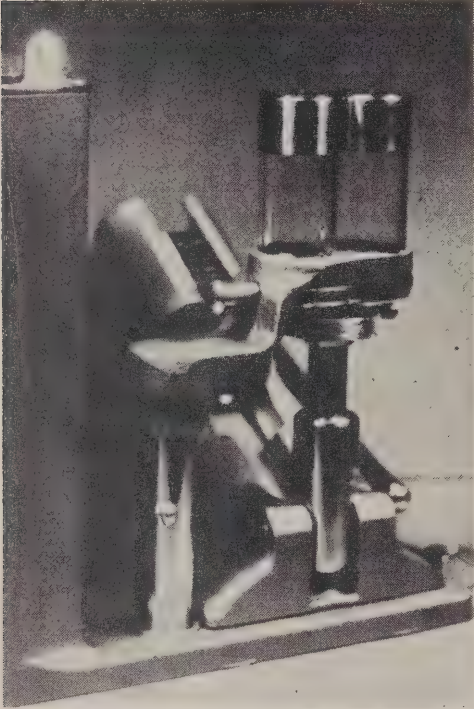


FIGURE 6 The dispenser for mercury and alloy in place over the cylinder.

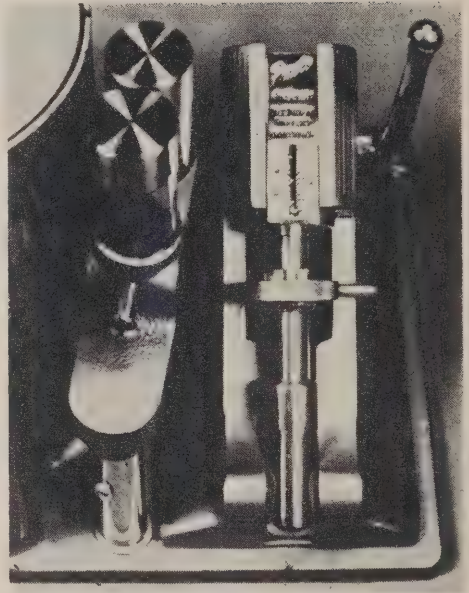


FIGURE 7 The piston inserted and the pressure gauge in position.

DISCUSSION

The common alloys in use today are partly annealed at the time of manufacture to allow an indefinite shelf life.

The original experiments with fine cut alloys available for the pressure method, resulted in an amalgam that, when condensed, took too long to acquire its initial set.

This being the case, a strain-hardened alloy was produced (i.e. not annealed) for use in pressure amalgamation. It was felt that the alloy must be in a strain-hardened state to allow quicker wetting of the particle surfaces by the mercury.

The only problem with such an alloy is its tendency to become annealed if stored for too long a period.

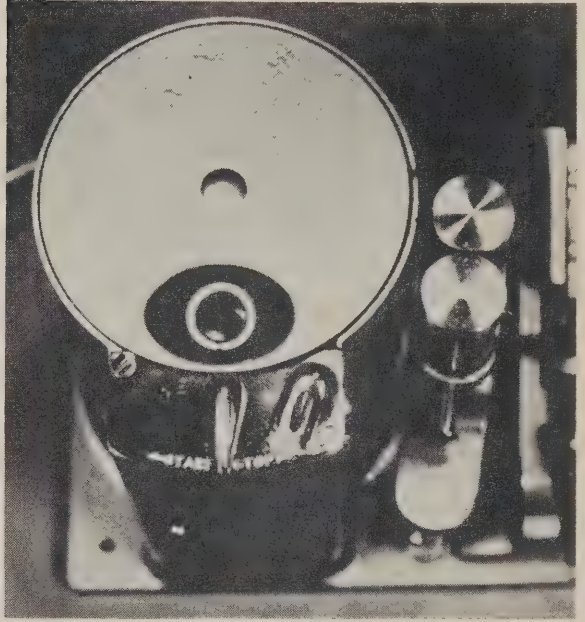
Further work has shown, however, that any alloy can be used, particularly if an efficient mulling device is employed.

This accomplishes the thorough wetting of the alloy particles and builds up the surface binder necessary to produce a good amalgam.

With pressure amalgamation, the following advantages or differences from standard techniques occur:

1. For the first time, we have a simple, convenient method whereby we can carefully control the mercury-alloy ratio,

FIGURE 8 The mercury and alloy after pressure amalgamation, ejected into the pear-shaped cup of the mulling device.



without weighing or dispensing with extreme accuracy in advance.

2. The fact that the alloy and excess mercury do not come in contact for an extended period of time, makes it much easier to keep the mercury level of the restoration low. The more mercury incorporated in a mix, the more difficult it is to remove—a common observation clinically and in the laboratory.

3. With one stroke of a lever we prepare the amalgam and express the mercury. (Any delay with conventional techniques when trituration is complete, before use of the mix, increases the retention of excess mercury in completed restorations.) A longer working time allows a little leeway in this regard and the mass can be quickly re-plasticized by the mulling device. One must remember we are using a "dry mix."

4. Precisely the same consistency and the same mercury-alloy ratio can be obtained each time by selecting the same pressure on the gauge. This is especially true now that an efficient mulling device has been attached to the unit. The problems of over and under squeezing with pliers, squeeze cloths and sore fingers, etc. are eliminated.

5. The lower the mercury content of any prepared amalgam, the more careful the condensation must be in any technique. This is particularly true with the technique advocated by Eames.⁵ Pressure amalgamation and mulling does not cause as rapid an initial set, or the sudden brittle stage so familiar with conventional techniques.

Consequently, condensation, while it must be thorough, is not nearly as diffi-

cult to accomplish due to the rather pliable nature of the amalgam while condensing and the slightly longer working time. In other words, it is much easier to adapt the amalgam well to the preparation.

Hand condensing alone can produce excellent results, but must be thoroughly carried out to ensure proper wedging of the particles in the mass.

Hand condensing in conjunction with a mechanical condenser set at a low intensity (2-4), and a high frequency (3,600) will give excellent results with 1 and 2 mm. diameter points. It is easier to develop a surface sheen as each increment is added with this latter method, particularly with the dry mixes that can be produced with the pressure amalgamator. The term "dry mix" usually conveys a definite feel and appearance of the prepared mass. With the use of the mulling device in the modified unit this term should only mean a low mercury to alloy ratio. For when the amalgam is removed from the cup of the muller, it has the appearance of a wet amalgam mix due to the plasticizing effect the instrument has had on the binder and the alloy developed during the mulling stage.

Probably the most interesting and perhaps the most important results of this type of amalgamation are the properties after condensation.

(a) Overpacking to remove the free mercury can be minimal as we are using an ideally prepared amalgam.

(b) The carving properties are much improved as the mass appears to have a "plastic set." In other words, the inserted amalgam seems to by-pass the rapid, brittle set we have been accustomed to with overtriturated fine cut alloys. Carving proceeds easily as the setting reaction occurs, and can go on for a much longer period of time with little change in texture. The restoration increases rapidly in hardness, but lacks the flaking, chipping properties characteristic of conventional techniques.

(c) Matrix removal is less likely to damage a marginal ridge due to an apparent lack of brittleness at this stage.

6. The finishing process is minimal, particularly if carving procedures have been carried out carefully. A highly polished surface is easily obtained with any systematic polishing sequence.

Dimensional changes over a two-year period appear to be minimal clinically, particularly in class V restorations. The majority of the polished restorations have maintained their smooth surface and lustre exceptionally well. However, according to clinical observation and recent investigation⁶ this quality will vary considerably from person to person regardless of retained mercury and surface finish.

The implications for the general practitioner are significant. Using reasonable condensing forces, he can produce an amalgam restoration that can be readily contoured, with a retained mercury content of 50 per cent or less. This would mean a definite increase in the life span of many amalgam restorations.

As in any polishing process for amalgam, the generation of excessive heat must be avoided, otherwise mercury will rise to the surface and marginal areas, causing early breakdown of a well-polished surface. The restorations left well contoured and carved, but not polished, have maintained their satin silver appearance. Where definite food pathways exist, "self-polishing" has occurred.

The ability of an amalgam restoration to take and maintain a good finish is dependent mostly on the wedging of as many alloy particles as possible into the matrix. This, of necessity, minimizes the matrix, the weak part of the restoration. The more particles of alloy jutting out on the surface of the restoration being polished, the better and longer lasting will be the finish.

This is one of the main reasons for controlling the mercury introduced into the preparation of alloy and mercury.

SUMMARY

It would appear from results to date that pressure amalgamation in combination with efficient mulling produces amalgam restorations more easily with the following desirable characteristics:

(a) An amalgamated mass with better working properties during condensation and a low mercury to alloy ratio.

(b) A material that is more readily carved and contoured after insertion.

(c) A restoration able to receive and retain a smooth surface finish, and dimensionally quite stable.

Further investigation is desirable at the laboratory and clinical level to verify the present findings.

The practitioner who, for years, has employed a careful technique both in the preparation of alloy and mercury and the thorough condensation of the amalgam mass, would find little difference clinically in the finished restoration, employing pressure amalgamation.

The difference would be apparent only in the stages of mercury and alloy preparation, and during the condensing and carving procedures. He would obtain the same, or better results, but would do so more conveniently and with less effort.

RÉSUMÉ

L'auteur décrit un nouvel appareil qui mêle l'alliage et le mercure sous pression.

Un appareil plus ancien était muni d'un cylindre et d'un piston qui s'adaptaient correctement; le cylindre était vissé dans la base pour s'appuyer sur une bille d'acier en guise de fermeture hermétique; cet appareil pouvait s'actionner à l'aide d'un ressort puissant et d'un levier muni d'une jauge calibrée de 1 à 4 (Figure 2). Le piston avait une section creuse ou une dépression dans la tige à environ 10 mm.

du bout; le cylindre était bien engagé; on y déposait une capsule de mercure et une autre d'alliage. Le piston y était mis en place fermement avec la main. L'appareil au complet était mis en place et le levier avancé rapidement au chiffre désiré sur la jauge. On le maintenait dans cette position durant une dizaine de secondes. L'excès de mercure exprimé de chaque côté du piston se logeait dans la dépression de la tige. On dévissait le cylindre et le piston qu'il renfermait et, en appuyant la main sur la tête du piston, on recueillait une boulette d'amalgame prête à être triturée.

On a ajouté à un nouvel appareil un distributeur de mercure et d'alliage et un dispositif pour la trituration (Figure 8).

On peut maintenant prélever et comprimer l'amalgame, enlever le surplus de mercure et triturer le tout en 5 ou 7 secondes. Le tritrateur est un disque actionné par un moteur et ce disque tourne à une très grande vitesse autour d'un réceptacle en forme de poire. Ce réceptacle a plusieurs concavités dans sa partie la plus grande. Le disque tourne dans une direction et le réceptacle dans l'autre. La force centrifuge développée par l'élan du disque projette avec puissance l'amalgame, du réceptacle dans les concavités. Cette opération donne les mêmes effets qu'une trituration rapide faite à la main.

Jusqu'à maintenant, cette amalgamation sous pression, en plus d'une trituration efficace, prépare plus facilement des restaurations en amalgame qui ont les qualités suivantes: (1) une masse amalgamée qui se condense mieux et qui a une proportion plus faible de mercure; (2) une substance obturatrice qui se sculpte et qui s'adapte mieux aux parois, après l'insertion; (3) une obturation que le dentiste peut polir plus facilement; qui garde sa surface polie; qui n'a à peu près pas de variation volumétrique.

Il faudra, pour vérifier ces constatations, entreprendre des recherches au sujet de cet appareil, en clinique et au laboratoire.

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Some Considerations of High versus Low Kilovoltage Techniques in Dental Radiographic Practice

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With the availability, in recent years, of dental x-ray equipment capable of operating at higher kilovoltages and milliamperages than have heretofore been used in dental practice, many dentists have found themselves faced with a dilemma, that of deciding whether to purchase the new adjustable voltage machines, or to continue using the older low voltage units. Of course the question to be answered is: what are the advantages of the newer adjustable voltage machines as compared to the lower voltage units?

In diagnostic radiography the ultimate goal is to obtain radiographs which possess maximum detail and definition of the structures to be visualized. These features are dependent upon three pri-

mary factors: optimum density, † optimum contrast, ‡ and absence of motion during exposure. These qualities in turn are determined by the operating technique factors of the x-ray machine, i.e., milliamperes, kilovolt peak, and exposure time. If maximum film detail and definition are to be obtained in practice, the relationship of milliamperes, time and voltage must be understood and utilized by the operator.

It is the purpose of this presentation, (1) to clarify these relationships as they affect film quality; and (2) to demonstrate and discuss some of the important features of high and of low kilovoltage techniques in dental radiography. In this way the interested practitioner may gain

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†Density, for the purposes of this discussion, may be thought of as the degree of blackness of a radiograph.

‡Contrast, radiographically, is the difference in film densities between two adjacent areas of a radiograph.

a better understanding of the potentialities of each technique and thereby, perhaps, more easily reach a decision as to which type of x-ray unit best meets his practice needs.

MILLIAMPERAGE AND EXPOSURE TIME

Milliamperage, as measured in x-ray machines, is a measure of the number of electrons (current flow) through the x-ray tube. Since x-rays are produced as a result of collision of fast moving electrons with the target material of the x-ray tube, it is obvious that a larger supply of electrons bombarding the target will result in the production of more x-rays. Thus, an increase in the milliampere setting of an x-ray machine will result in the production of an increased number of x-rays per unit time.

For any given setting of the milliampere control, the total quantity of x-rays emitted from the tube head will be directly proportional to the time that the machine is allowed to run. Thus, the operator may vary the quantity of x-ray production by altering either the time of exposure or the amount of current flow (milliampere dial setting).

In dental radiography, milliamperage (Ma) and time (S) are considered as a single factor called milliampere-seconds (MaS). Within practical limits the MaS factor can be considered to determine the quantity of x-rays produced. Figure 1 shows radiographs which were made by altering the time and the milliamperage in such a manner that the MaS factor remained constant. Voltage for all exposures was the same. No important differences in film quality can be distinguished, demonstrating that it is the MaS factor rather than time or milliamperes alone which determines total exposure and, thereby, film density.

It is apparent that a machine which can be set to deliver 15 Ma could use a shorter exposure time to achieve any

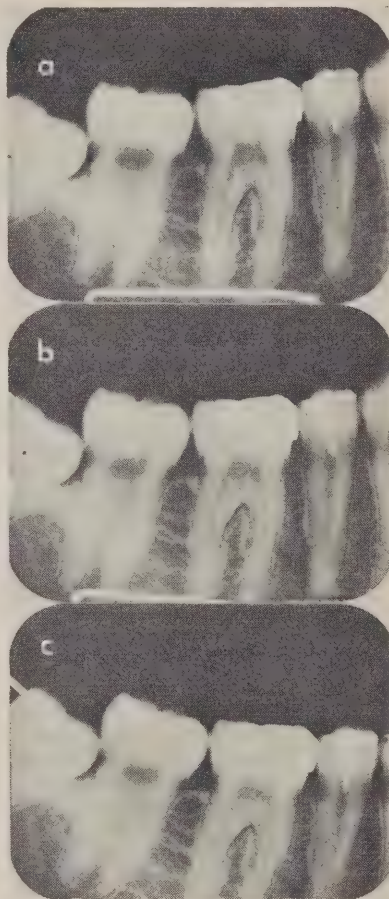


FIGURE 1 Radiographs made altering milliamperes and time so that the MaS factor remained constant: (a) 90 KVP, 5 Ma, 1/10 second; (b) 90 KVP, 10 Ma, 1/20 second; (c) 90 KVP, 15 Ma, 1/30 second.

given film density than could one which will deliver only 5 or 10 Ma. This shorter exposure time reduces the possibility of film or patient movement during exposure, and thus is an important factor in the overall quality of radiographs produced.

MaS is the major controlling factor of the density of a radiograph, and the re-

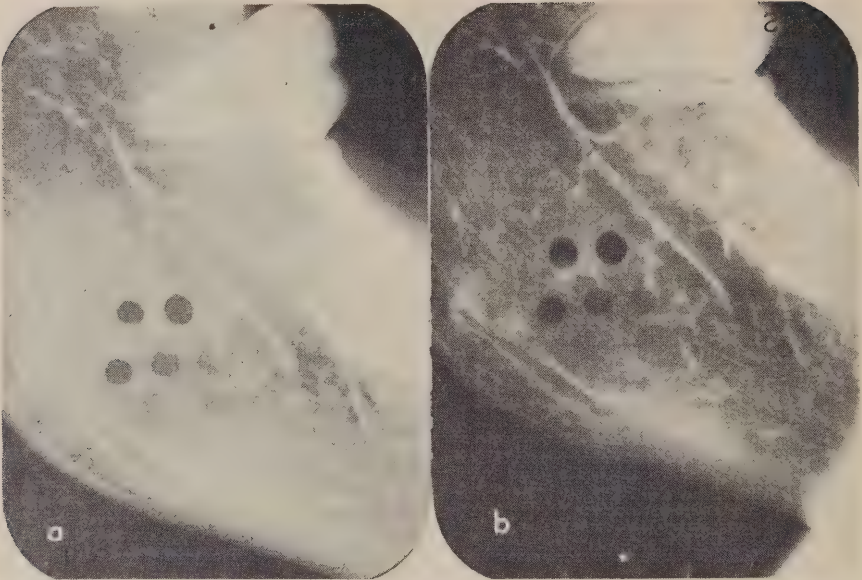


FIGURE 2 Radiographs of the angle of the mandible into which holes of various depths have been placed: (a) 90 KVP; (b) 65 KVP. Notice the increased contrast evidenced in (b).

ALUMINUM STEP WEDGES

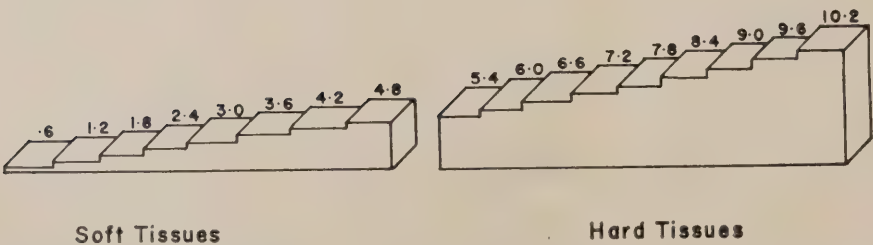


FIGURE 3 Diagram of aluminum step-wedge used for radiographs presented. Numbers above the steps indicate millimeters of aluminum thickness at each step.

lationship is a direct one, i.e., the higher the MaS, the greater will be the density.

KILOVOLTAGE

Kilovoltage (KVP) is the term used to describe the voltage difference or emf which is placed across the cathode (filament) and anode (target) of an x-ray tube. It is this voltage difference that accelerates the negatively charged electrons which are emitted from the hot tube filament, thereby imparting to them the high energies needed to produce x-rays when they collide with the material of the target. As the kilovoltage is increased, the electrons gain higher energies and, therefore, produce higher energy (shorter wave-length) x-rays at the target. Thus, the kilovoltage determines (within limits) the quality of the x-ray beam. Kilovoltage is one of the major factors governing contrast of a radiograph, and the relationship in this instance is an inverse one, i.e., lower voltages lead to higher contrast.

APPLICATION

When two adjacent structures of almost similar density are to be radiographed, the most striking differentiation of the two will be achieved when radiographic contrast is high, i.e., when low kilovoltage is used with adequate exposure (compare [a] and [b] in Figure 2).

However, when a specimen having a wide range of thicknesses and/or densities is to be radiographed, discernment of details throughout the radiograph will be better with higher applied kilovoltage. When radiographing specimens of this type (periodontal structures and teeth for example) use of low kilovoltage may result in a loss of detail visibility in either the high or the low density areas of the specimen.

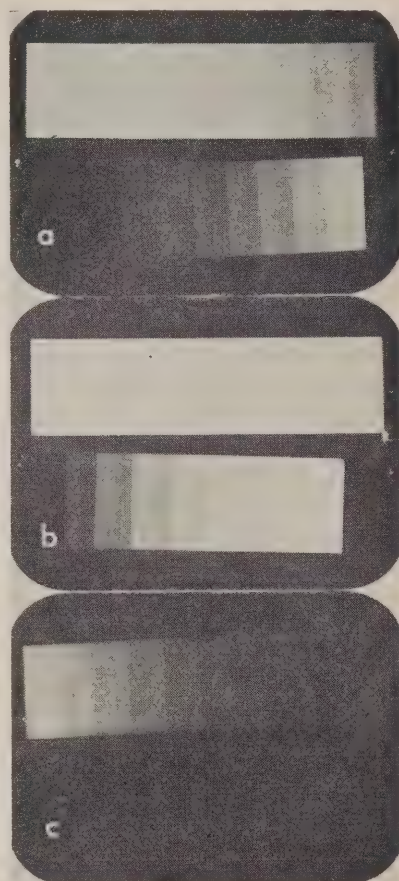


FIGURE 4 Aluminum step-wedge radiographs made at: (a) 90 KVP, 10 Ma, 1/20 sec.; (b) 65 KVP, 10 Ma, 4/10 sec.; (c) 65 KVP, 10 Ma, 8/10 sec. The lower pattern in each radiograph represents soft tissue densities.

These relationships can best be demonstrated using an aluminum step-wedge which has a thickness range such that densities comparable to those of soft tissues as well as those of alveolar bone and teeth are represented. A diagram of such a step-wedge is shown in Figure 3.

Figure 4 is a reproduction of step-wedge patterns made using 65 KVP and 90 KVP respectively. The patterns made at the

lower voltage (Figures 4b and 4c) show more contrast between adjacent steps (in those areas where steps are discernible) than does that made with the higher voltage (Figure 4a). However, the steps at the end, representing soft tissue densities (Figure 4c) are so dark that it is impossible to discern between steps in this range. If the total exposure using 65 KVP is reduced enough to allow discernment of these lower density steps, the upper end of the scale is so light that discrimination of these higher densities is not possible (Figure 4b). In the pattern of the 90 KVP exposure (Figure 4a) the entire range of density steps is discernible, though the contrast between adjacent steps is somewhat reduced from that of the lower voltage patterns. Thus it is apparent that the lower KVP exposures produce short scale, high contrast radiographs and the 90 KVP exposure results in a long scale, low contrast pattern. These features are also evident in Figure 2.

The recognition and understanding of these factors is important to anyone attempting to evaluate and/or modify a particular radiographic technique to his special needs. The ability to properly control these variables in dental radiography will lead to greater versatility and accomplishment in the production of quality radiographs which offer maximum diagnostic value.

It should now be apparent that there is a rather wide range of usable voltages in dental radiography, and that the choice of voltage to be used for a given type of radiographic examination may well depend upon the specific structures as well as upon the range of structural densities which it is desired to visualize. For example, in Figure 5 are presented a series of radiographs which were exposed using different kilovoltage techniques. As the KVP is raised, the various structures having high densities (enamel, metal restorations, and cement bases) become more easily distinguished due to the increase in penetrating power of the x-ray beam; yet, the less dense tissues can still be



FIGURE 5 Radiographs made with: (a) 65 KVP; (b) 70 KVP; (c) 90 KVP. Constant film density was maintained. Compare the clarity of the cement base under the metallic restoration in the low and high voltage radiographs.

visualized because of the extended range of contrast.

It should also be mentioned that, because the exposure latitude becomes greater as the range of contrast lengthens, it is to be expected that radiographs of greater uniformity will be produced with high voltage techniques, all other factors being equal.

RADIATION HAZARD CONSIDERATIONS

Because the patient radiation dose is proportional to the area irradiated, and is related to the average wave-length of the x-ray beam, it is important (with any x-ray machine) to use adequate filters and proper collimating diaphragms which will remove the more dangerous long wave-length x-rays while limiting the area of patient exposure.

Also, since the amount of scattered and secondary radiation is dependent to some degree on volume of material in the path of the primary beam, reduction in area of patient irradiation will also reduce, to some extent, the scattered and secondary radiation within the office.

Although it is to be expected that a reduction in MaS (with compensating increase in KVP) would result in reduction of patient dosage, the actual reduction in dosage is not as marked as one might think. Thus it has been shown by Updegrave¹ that in changing from a 65 KVP technique to a 90 KVP technique (while maintaining constant film density) the reduction in skin dosage was only about 18 per cent. He further points out that, because of the more penetrating nature of the high KVP beam, even greater exposures to the patient may be realized if dosage to the entire head, rather than skin dosage, is considered.

Also, it should be remembered that as KVP is raised the amount of scattered and secondary radiation in the x-ray room increases. It is therefore possible that the operator, if improperly shielded, might be exposed to more radiation with the higher voltage techniques.

In view of these considerations it would seem that the use of higher voltage x-ray machines may not offer significantly decreased radiation exposure hazards over properly filtered and collimated lower voltage machines. We must recognize that probably the most important single method for reducing radiation exposure in the dental office is the routine use of ultra-fast film emulsions.

SUMMARY

The importance of several variables, each adjustable by the operator of the x-ray machine, in the production of quality radiographs is discussed. Examples of the major effects achieved by altering milliamperes, time, and kilovoltage are presented and a brief discussion of the underlying theory is offered.

The practical value of a working knowledge of the physical relationships involved in production of dental radiographs of various dental structures is pointed out and several illustrations which serve to emphasize the discussion are presented.

Some important aspects of the problem of radiation hazards in the dental practice are considered.

RÉSUMÉ

L'auteur discute l'importance de plusieurs facteurs que l'opérateur peut contrôler dans l'ajustement de l'appareil de radiographie et qui interviennent dans la réalisation de bonnes radiographies.

Deux structures de densité semblable peuvent être différenciées d'une façon évidente en radiologie, quand le contraste est considérable, c.-à-d., quand on emploie un faible kilovoltage avec le bon temps d'exposition. Toutefois, on pourra accentuer les détails d'un spécimen qui a une gamme variée d'épaisseur ou de densité en utilisant un haut kilovoltage.

Il est important, avec tout appareil de radiographie, d'employer de bons filtres et des diaphragmes collimateurs qui éliminent les rayons à onde longue qui sont dangereux, tout en réduisant la zone d'exposition du patient. Cette précaution a son importance parce que la dose d'irradiation du patient est proportionnelle à la zone irradiée et en rapport avec la moyenne de longueur d'onde du rayon radiologique.

En réduisant la zone d'irradiation, on diminue aussi, jusqu'à un certain point,

les irradiations secondaires et éparses dans le cabinet, puisque la somme de ces irradiations s'établit à un certain degré d'après le volume de la substance qui se trouve sur le passage du rayon primaire.

L'auteur croit que l'emploi d'appareils à haut voltage n'abaisse pas d'une façon appréciable les dangers d'exposition aux rayons-X; les appareils à bas voltage

munis de filtres et de diaphragmes sont aussi surs. La meilleure façon d'abaisser l'irradiation consiste probablement dans l'emploi de pellicules ultra-rapides.

REFERENCE

1. Updegrave, W. J. High or Low Kilovoltage. *Dental Radiography and Photography*, 33:71, No. 4 1960.

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ABSTRACTS

A CELLULAR STUDY OF PLAQUE

J. D. Wildman. *D. Progress* 2:211, April 1962.

At the cellular level, little is known of the processes of soft-plaque formation. Two types of body cells may be involved, the leucocytes and what appear to be epithelial cells. This study was concerned only with the latter type of cell.

Under the microscope, there is considerable variation in the numbers and types of epithelial-like cells found in soft-plaque specimens. The author describes a unique cellular structure, which he terms a "bleb." From the appearance of the blebs and the texture of cytoplasm there is some evidence that epithelial-like cells are involved in plaque metabolism. Stain tests also reveal what may be intra-cellular deposits of glycogen, which would tend to support the growth of organisms. However, fifty specimens from twenty-seven subjects revealed no uniform relationship between possible glycogen presence and organism growth.

In general, this study points the way toward further cellular investigation.

DENTAL CARIES IN MONGOLISM

R. A. Winer and M. M. Cohen. *D. Progress* 2:217, April 1962.

A comparison was made of decayed and filled teeth among ninety-nine mongoloids and 97 non-mongoloid mentally subnormal patients of the same institution. The mongoloids were considerably less affected with dental caries, even at the normally high caries ages of from 13 to 17. No observable caries was seen in 58 per cent of the mongoloid group and in only 10 per cent of the non-mongoloid group. Because of the low mental ages of the subjects, dental care was poor, and a high caries incidence was expected but not found. Similarly, diet has been ruled out. The factor or factors have yet to be determined that have protective effects against caries in mongoloids.

EDITORIALS

There are None So Blind . . .

Elsewhere in this issue of the Journal there appear two papers which were read at this year's Canadian Dental Association feature panel on "Socio-Economic Trends in Health Services." Those who listened to the presentation were given a rare treat. Seldom have dentists heard a more lucid and thought-provoking exposition of this vexing topic than that given by Dr. Malcolm Taylor. Rarely have they had such an opportunity to learn at first hand the views of organized labour. The subject was timely, the discussion forthright and enlightening but the size of the audience was something else again.

Incredible as it seems, this national convention attended by almost a thousand dentists could barely muster an audience of 150 souls for this all-important part of the program. This is in spite of the fact that this panel received substantial advance publicity through the convention supplement, the news columns as well as the editorial columns of this Journal, not to mention other media. Yet from the poor response one can only judge that the average dentist remains shockingly indifferent about his own fate and that of the public he serves. His traditional reticence in matters beyond the scientific scope of his work is, of course, well known. But one might have expect-

ed the political events of the past three years to stir him to a greater awareness of and curiosity about the meaning of the tide of social change with which he must come to grips.

And surely the signs of impending change are obvious all about us. Why else does a Federal Royal Commission make such a searching probe of the nation's health needs? What was the meaning of the tragic Saskatchewan imbroglio over the implementation of compulsory medical insurance? And why have dentists in three western provinces witnessed legislative approval given to the sharing of an important segment of dental practice by sub-professional groups? Yet when the Canadian Dental Association presents the country's foremost authority on health insurance together with a senior spokesman for the 1,131,280-member Canadian Labour Congress on a topic of vital concern to every Canadian dentist, convention delegates are conspicuous by their absence.

Some practitioners undoubtedly feel quite secure in the belief that traditional patterns of practice will be perpetuated indefinitely. Others, however, are uneasy about the future. Certain it is if dentists wish to continue to render services which are in the best interests of their patients, in an atmosphere which is compatible

with traditional concepts of professional freedom and responsibility for the services rendered, and under conditions which do not threaten the economic security of the practitioner, that they must do more than merely denounce our political institutions, proclaim their own virtue, or berate their professional association for alleged breaches of vigilance when-

ever they are confronted by unpalatable facts of life.

Clearly the dentist's most pressing need is to explore fully the viewpoints of other segments of society. He cannot afford to remain unreasonably indifferent in the face of public concern over health care. He must explore these misgivings, not turn away from them. He should do so at once.

The Canadian Dental Association: Instrument of the Nation's Dentists

There have been several recent expressions of interest and concern over the *modus operandi* and structure of the Canadian Dental Association. Interest in the national organization is always welcomed and concern is never ignored. Anxiety in this particular instance was associated with the conditions whereby the Association receives its revenue and the manner in which its Board of Governors is constituted. It may therefore be helpful to examine the facts lest any dentist concludes that the Association arbitrarily pre-empted a portion of his licensing fee, giving him only a restricted voice or no participation at all in the conduct of its affairs.

The Canadian Dental Association is composed of ten corporate members. Nine of these are the provincial statutory corporations from British Columbia to Nova Scotia, with the Newfoundland Dental Society as the tenth corporate member. In addition, licensed dentists within the jurisdiction of the respective corporate members are individual members of the Association unless they indicate any objection by withdrawing from such membership.

The revenue of the Association is derived from annual grants from the corporate members. The amount of these grants is determined by the corporate members.

The Board of Governors is composed of representatives of the various corporate members. Each corporate member is entitled to at least one representative, as well as a further representative for every additional five hundred of its members or major portion thereof. At present four provinces elect their representatives, whereas these are appointed in the six other provinces.

In essence this makes the Canadian Dental Association a creature of the corporate members who in turn are composed of individual licensed dentists. The corporate members support the Association financially in the same way that sovereign member states support the United Nations Organization. Each corporate member determines the amount of its grant to the Canadian Dental Association. In arriving at this figure, cognizance is obviously taken of the Association's total program and budget requirements, as well as the fiscal practice

of the other corporate members. The important considerations are: (1) that the grant is a lump sum determined by the corporate member, and (2) that the amount of the grant is flexible and can be altered by the corporate member. In fact a corporate member may cease paying its grant altogether and withdraw from the Association provided notice is given one year in advance of this intention.

The benefits of individual membership are entirely gratuitous. If a dentist chooses to withdraw from membership, he merely ceases to receive the corresponding benefits. But this action does not in any way alter his licensing fee. Individual membership status and fiscal support for the Canadian Dental Association are thus revealed as separate and distinct entities.

The activities of the Canadian Dental Association quite clearly require the consent and support of a majority of its individual members. For if the senior officers of the Association should deliberately embark upon a course which is contrary to the expressed will and good judgement of a majority of the members, this would undoubtedly prove to be their last action in this capacity. One might readily visualize the swift reaction from aroused individual members which would compel the elected governing bodies of their corporate members to take appropriate action, even to the extent of withdrawal of fiscal and membership support from the Association.

Furthermore, every member of the Canadian Dental Association is entitled to present his personal viewpoint to the Board of Governors. And it is precisely in order to maintain this direct contact that individual dentists are repeatedly urged to attend annual meetings of the Board where they may bring persuasion to bear upon the formulation of the Association's politics. More is the pity that so few dentists take advantage of this opportunity.

This is not to say that the existing relationship between practitioners, cor-

porate members and the Association is necessarily the only way or the best way to form a strong national organization. At the instigation of a former Association president, the Board of Governors in 1960 suggested that a review be made by the corporate members of the practices pertaining to the selection of Board members, and as a result the method of selection was changed from appointment to open franchise in one province. But this is about as far as the Canadian Dental Association can go because it cannot and does not dictate to the corporate members how they should act in this or any other respect. It is up to each corporate member to determine the method of selecting its Board members and action in this regard is entirely beyond the jurisdiction of the Canadian Dental Association. This clearly leaves the ultimate responsibility with the individual dentist.

Individual members who are dissatisfied with existing arrangements should voice their concern to the governing body of the corporate member within whose jurisdiction they practise. The corporate member is bound to respond if a sufficient number of dentists act in concert. And if a majority of corporate members seek a change, there will be alteration in the national organization.

However, in view of the corporate structure of the Canadian Dental Association, two elements must be kept in mind in any consideration of the relative merits of representation by open franchise versus appointment. In the first instance, an open election could produce a representative to the Board of Governors who is neither a member of his corporate member's governing body nor familiar with that organization's policies and programs. In the second instance, such a representative might have to make decisions involving the expenditure of moneys which are not under his control but under the control of the governing body of the corporate member. It is not suggested that these problems are insoluble. None of these difficulties is insurmountable.

However, the statutory nature of the corporate members may impose certain impediments. These facts are therefore presented in order to indicate some of the problems which must be faced.

In any event the way is open to Canada's dentists to effect changes by con-

stitutional means if, in their opinion, the national organization does not adequately reflect their aspirations. It is worth emphasizing that every dentist can bring as much influence to bear as he wishes to exercise in this regard.

DENTISTRY IN THE NEWS

Canada and the Provinces

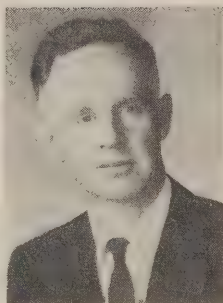
NOVA SCOTIA

Atlantic Provinces Dental Convention. — Nearly two-hundred dentists from New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island attended the Atlantic Provinces Dental Convention at the Digby Pines Hotel, Nova Scotia, June 21-24, making this the largest gathering of its kind. The general chairman of the convention was D. C. Eaton of Halifax who with T. L. Rogers, the president, presided at all functions.

The clinicians who participated in the program and their topics were: Captain T. R. Humley of the U. S. Naval Dental School, Bethesda, Maryland — Biological Considerations and Operative Techniques in Operative Dentistry; Cyril Gaum of the endodontic department, Tufts University School of Dental Medicine, Boston—Surgical and Non-Surgical Endodontics; John Findlay, associate professor of Periodontics at Dalhousie University dental school, Halifax—The General Practitioner's Responsibility in the Diagnosis and Problems encountered in the Planning of Treatment for Periodontal Conditions; H. M. Eaton, professor of Radiology at Dalhousie University dental school, Halifax—Differential Radiographic Interpretation; and Claude

Baril, associate professor of Orthodontics at the Faculty of Dental Surgery, Université de Montréal—Mixed Dentition Analysis and Serial Extraction.

BRITISH COLUMBIA



Campbell

M. J. T. Dohan

B. C. Dental Association.—New officers for the association chosen at the recent annual meeting are: M. J. T. Dohan, president; O. F. Wright, president-elect; J. C. Lewis, past president; S. Margolese, treasurer. Named as directors were S. S. Banford, W. W. Mc-

Luhan, D. E. Waller, D. J. Yeo, K. W. McCann, C. W. Gardner, J. F. Reid, H. G. Pettapiece, W. H. Letham and H. G. Steed.

Amalgamation of the British Columbia Dental Association, which is a voluntary organization, and the College of Dental Surgeons of British Columbia, the statutory dental corporation in the province, comes up for discussion at intervals. A fact-finding committee has been appointed to study the proposal.

Prepayment Plan.—A dental service corporation, known as The Dental Services Association of British Columbia, has been incorporated under the Societies Act and it is anticipated that a pilot prepayment plan for dental care will be put into operation before long. Several groups have expressed their interest in such a plan, but certain requisites have been laid down for the group and the participating dentists to assure the success of the pilot scheme.

QUEBEC

Société Dentaire de Montréal. — The professional organization of Montreal's French-speaking dentists recently concluded another year of activity. Five scientific meetings were held during 1961-62. The lecturers and their subjects were: M. Robichaud, crown and bridge prosthodontics; M. B. Archambault, endodontics; H. Deschênes, operative dentistry; J.-P. Lussier, auxiliary services; A. McCracken, partial denture prosthodontics; and S. Tylman, crown and bridge prosthodontics. The two latter meetings were held in conjunction with the other two Montreal dental groups. His Eminence Cardinal Paul-Emile Leger, Archbishop of Montreal, addressed the April meeting of the society.

In 1962 more than 125 dentists enrolled in various study groups organized by the Société Dentaire de Montréal at the suggestion of the College of Dental Surgeons of the Province of Quebec. The society also continued the publication of its bulletin which appeared nine times during the past year.

In April the society presented a brief to the Royal Commission on Health Services.

The annual election of officers resulted in the following executive committee: Roger Grégoire, president; Jean Guimond, first vice-president; Jacques Fiset, second vice-president; Claude Madore, secretary; Clément Vallée, secretary; Lucien Latour, assistant secretary; and Gérard Lussier, librarian. Appointed as councillors were François Clou-

tier, Denis Quintal, Viateur Sylvestre, and André Paré. Claude Vachon was named adviser.

SASKATCHEWAN

Study Dental Nurse Service.—According to the Saskatchewan public health department's *Health Newsletter*, a group of two dentists and a public service accountant left early in July for Wellington, New Zealand to study that country's school dental nurse program. A. E. Chegwin, director of Dental Health for the department, and J. J. Schachter, a Saskatoon orthodontist, went to New Zealand, accompanied by C. M. MacKay, assistant director (Accounting) of the Hospital Administration and Standards Division of the Department of Public Health.

New Zealand's dental nurse program was established in 1923. It now employs 800 dental nurses who are responsible for the dental health of some 500-600 children each. The Saskatchewan government is interested because of "the worsening shortage of dentists and difficulties in recruiting and holding dental auxiliaries such as dental hygienists," the report states.

International Items

SEVENTEENTH INTERNATIONAL PERIODONTAL CONGRESS SLATED FOR ATHENS, GREECE

The Seventeenth Congress of the ARPA Internationale (International Association for Periodontal Research) has been scheduled for Athens, Greece from April 15 to 20, 1963.

The following scientific program has been announced:

1. Essays: Bruxism—Karolyi Effect; Indications for the Surgical Treatment of Periodontal Disease.

2. Panel Discussions: Selective Grinding; Medicaments in the Treatment of Periodontal Disease.

3. Lectures, Table Clinics, Motion Pictures, Dental Exhibits.

4. "Concilium Parodontologicum" on the following subject: The Problem of Periodontal Symptoms Applied to the Epidemiological Study of Periodontal Disease.

5. Award of the "Prix Dr. h. c. René Jaccard."

A varied and interesting social program has been planned for the period immediately following the congress. This will include various receptions, visits and excursions, as well as artistic entertainment and a cruise to the islands of the Aegean Sea.

Further information concerning the scientific program may be obtained from Professor A. J. Held, Institut de Médecine Dentaire, 30 rue Lombard, Geneva, Switzerland. General information, including details of the provisional program, registration fees, etc. may be obtained from Professor O. Louridis, 8 Hippocratous Street, Athens, Greece.

CEYLON

The Administration Report of the director of Health Services for 1960 refers to a survey conducted to assess the state of dental health among school children in the 7, 9, 11, 13 and 15 year age groups, covering a total of 6,830 children. At the same time as this survey, but quite independently, a survey of water supplies to determine the fluoride content of the water was undertaken. High fluoride content was especially found in the water supplies in the northern, north-central and north-western provinces (dry zone) i.e. an average of 0.43 p.p.m. in comparison with the wet zone areas which revealed an average of 0.08 p.p.m. fluoride.

The most dramatic result of the survey was the marked difference in dental health between the high rainfall (wet zone) and low rainfall (dry zone) areas of the island. Children from the dry zone provinces have far less caries than those from the wet zone, independent of their ethnic origin.

The purpose of the survey was to enable the priority areas for the establishment of Ceylon's school dental service to be determined. It was also intended to serve as a base-line picture of conditions at the beginning of the new service, which is to be operated primarily by dental nurses who are trained at the school established for the purpose at Maharagama.

NIGERIA

A recent visitor to Nigeria was R. D. Emslie of the Department of Preventive Dentistry at Guy's Hospital, University of London. Dr. Emslie conferred with the authorities of the University College Hospital of Ibadan, Nigeria on the dental aspects of cancrum oris in Nigerian children. Of the fifty cases he saw, nearly all started with an acute gingivitis of the Vincent's type. The systemic background of the children was investigated and bacteriological, histological and serological material collected. The sera are being investigated at the Radcliffe Infirmary, Oxford, England for evidence of primary infection with the herpes simplex virus.

UNITED STATES

Canadian Government Dental Consultant Visits Dental Organizations in the State of Washington.—H. K. Brown, dental consultant of the Department of National Health and Welfare, Ottawa visited the offices of Washington Dental Services (the dental service corporation in the State of Washington) in early June to gather additional information concerning prepaid dental care in the United States. Dr. Brown also inspected the dental exhibits of the Washington State Dental Association at the Seattle World's Fair where he commented on the manner in which dental recruitment had been worked into the exhibit.

Dr. Brown was returning to Ottawa, following his attendance at the annual meeting of the Canadian Dental Association in Vancouver, British Columbia, when he made his Seattle stopover.

Canadian Dental Schools

APPOINT S. W. LEUNG AS DEAN
OF DENTISTRY AT UNIVERSITY
OF BRITISH COLUMBIA

The recently announced appointment of S. Wah Leung as dean of the Faculty of Dentistry and professor of Oral Biology at

the University of British Columbia marks another important milestone for Canadian dentistry. By this action Canada acquires its newest and seventh dental school. Announcing the appointment, University of British Columbia president J. B. Macdonald said that Dr. Leung would assume his duties in September to begin detailed planning of the new dental school.

Dr. Leung was born in China. He received his early education in Edmonton and Vancouver, and attended the University of British Columbia from 1937 to 1939. Dr. Leung received his dental education at McGill University where he was awarded the gold medal for the highest standing in dental surgery on graduation in 1943. He also earned the degree of Bachelor of Science from McGill University in 1945.



S. W. Leung

Dr. Leung was a dental intern at the Royal Victoria Hospital in Montreal during 1943 and 1944. He then enrolled at the University of Rochester and received the degree of Doctor of Philosophy from that university in 1950. At Rochester Dr. Leung was a fellow in dentistry from 1944 to 1947 and Eastman Fellow in Dentistry from 1947 to 1950.

From 1950 until 1961 Dr. Leung was associated with the University of Pittsburgh School of Dentistry. In 1952 he was named professor and chairman of the Department of Physiology there and from 1957 to 1961 he was professor of Dental Research, director of Graduate Education, and director of Research and Teacher Training.

Last year Dr. Leung joined the faculty of the University of California at Los Angeles

to assist in the planning of a new dental school there. He was appointed a professor of Oral Biology in the School of Dentistry and a lecturer in Physiology in the School of Medicine.

Dr. Leung holds membership in a number of learned societies including the American College of Dentists and the American Association for the Advancement of Science. He has acted as a consultant to the National Board of Dental Examiners in the United States since 1960 and has held editorial posts on two dental journals. In addition he has served as consultant to the National Institutes of Health in the United States. *

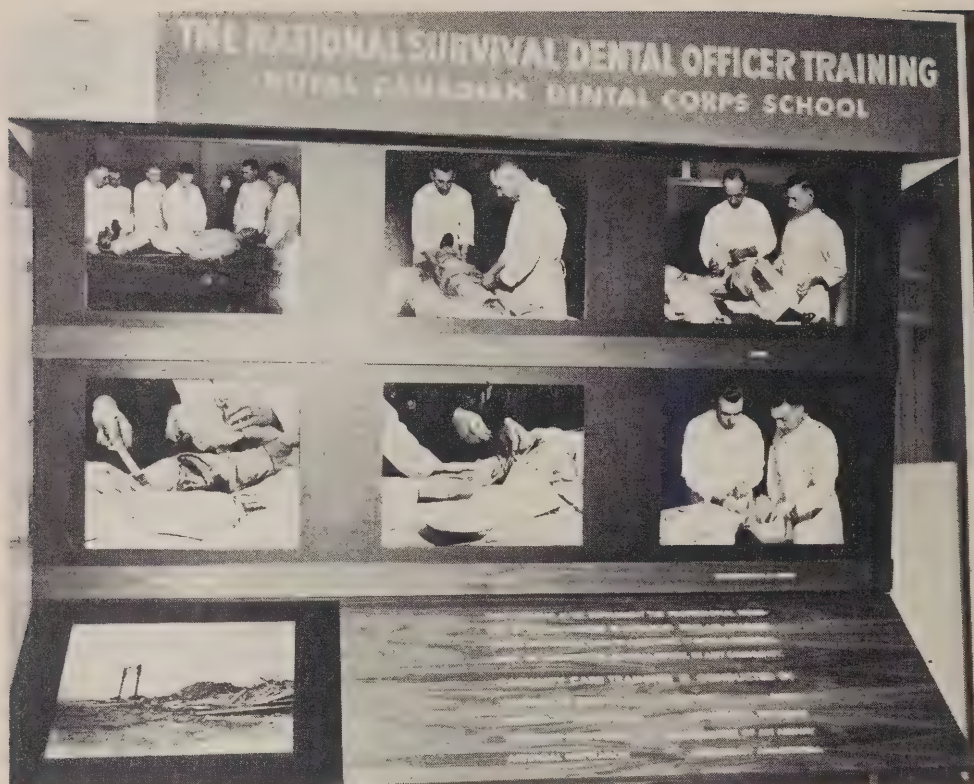
Royal Canadian Dental Corps

DIRECTORATE OFFICERS VISIT CAMP BORDEN

Brigadier K. M. Baird and Colonel I. A. L. Millar visited the R.C.D.C. School, Camp Borden to interview and inspect the officer cadets and second lieutenants on course and to participate in the Passing-Out ceremony which marked the completion of their second and third year of summer training.

NEW OFFICERS IN THE CORPS

The graduating classes of four Canadian universities have provided twelve new dental officers who were promoted to the rank of captain in the Royal Canadian Dental Corps and will begin their careers in the Corps at the following locations: Capt. N. H. Andrews of Dalhousie at Headquarters, Manitoba Area, Winnipeg; Capt. L. T. F. B. Archambault of Montreal at H.M.C.S. Cornwallis; Capt. P. A. A. Dailyde of Toronto at Griesbach Barracks, Edmonton; Capt. W. J. Froese of Manitoba at Headquarters, Manitoba Area, Winnipeg; Capt. T. M. Johnston of Toronto at Headquarters, Manitoba Area, Winnipeg; Capt. G. A. Johnson of Toronto at the Northwest Highway System, Whitehorse; Capt. V. D. Kvedaras of Toronto at R.C.A.F. Station, Trenton; Capt. J. P. A. Legendre of Montreal at Currie Barracks,



Pictured is the new Royal Canadian Dental Corps display on national survival dental officer training. The display was exhibited at the Ontario Dental Association Convention and at the annual meeting of the Canadian Dental Association this spring, drawing favourable comments at both meetings.

Calgary; Capt. N. A. McFarlane of Toronto at H.M.C.S. Cornwallis; Capt. A. B. Perkin of Toronto at the Canadian Forces Hospital, Kingston; Capt. W. E. Russel of Dalhousie at Camp Gagetown; and Capt. W. J. Sinclair of Toronto at R.C.A.F. Station, Downsview.

ANNOUNCE ADDITIONAL POSTINGS

In addition to those announced in the August issue of the *Journal of the Canadian Dental*

Association, the following postings of dental officers have been effected this summer:

Major R. J. Bryant from R.C.A.F. Station Portage la Prairie, Manitoba to R.C.A.F. Station Winnipeg, Manitoba.

Capt. R. D. Bunt from Canadian Base Units, Middle East to R.C.A.F. Station Trenton, Ontario.

Capt. M. D. G. Conrad from R.C.A.F. Station Greenwood, Nova Scotia to Canadian Base Units, Middle East.

Capt. P. J. J. Coulombe from No. 4 Field Dental Company, Germany to R.C.A.F. Station Clinton, Ontario.

Capt. R. H. Headley from 8th Canadian Hussars, Fort Beausejour, No. 4 Field Dental Company, Germany to 1st Battalion, Queen's

Own Rifles of Canada, Fort McLeod, No. 4 Field Dental Company, Germany.

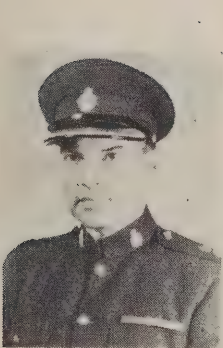
Capt. J. G. B. Parent from R.C.A.F. Station St. Jean, P.Que. to R.C.A.F. Station Goose Bay, Labrador.

Capt. W. F. Shaw from Camp Gagetown, New Brunswick to No. 4 Field Dental Company, Germany.

Capt. O. A. Tucker from R.C.A.F. Station Winnipeg, Manitoba to R.C.A.F. Station Portage la Prairie, Manitoba.

COLONEL SHILLINGTON TOURS EUROPE

Colonel G. B. Shillington recently completed a tour of Europe during which he inspected No. 4 Field Dental Company, commanded by Lt.-Col. G. E. Evans and No. 35 Field Dental Unit, commanded by Lt.-Col. L. G. Craigie. His itinerary also took him to Cologne, Germany, where he attended the XIIIth International Dental Congress of the Fédération Dentaire Internationale and to London, England where he conferred with the heads of Dental Services of the Royal Navy, British Army and Royal Air Force.



Continuing the series of photographs of commanding officers of Royal Canadian Dental Corps militia units located across Canada, portrayed in this issue of the Journal of the Canadian Dental Association are Lt.-Col. H. J. Chartrand, left, of No. 45 Dental Unit in Ottawa and Lt.-Col. A. Z. Henry, right, of No. 56 Dental Unit in Toronto.

Public Health

BRANTFORD'S FAVOURABLE FLUORIDATION EVIDENCE MOUNTS

The recently released 1961 report of the Brantford fluoridation caries study provides further impressive evidence of the protective value of fluoridated water. The 1961 survey compares 14- and 15-year-old children from Brantford (artificially fluoridated water), Stratford (naturally fluoridated water) and Sarnia (fluoride-free water). Sixteen per cent of the Stratford and Brantford children were caries-free, whereas only 1 per cent of the Sarnia group had caries-free permanent teeth. There was a marked difference in tooth mortality between children from Brantford and Stratford on the one hand and from Sarnia on the other. Among 100 Brantford children a total of just over 30 teeth had been lost. Among 100 Stratford children about 25 had been lost. Among 100 Sarnia children a total of just under 82 permanent teeth had been lost. The D.M.F. rates were more than twice as great in Sarnia than in Brantford and Stratford. The children of the Sarnia group averaged about eight permanent teeth per child attacked by tooth decay, the Brantford children just under 4, and the Stratford children about 3. Freedom from caries experience in the upper permanent incisors was recorded in about 50 per cent of the Sarnia children, just under 87 per cent of the Brantford group, and in about 89 per cent of the Stratford group. No medical ill-effects attributable to the presence of fluoride in the water, were observed by dental examiners of the Department of National Health and Welfare, by local public health authorities or by practising physicians in Brantford or in Stratford.

FLUORIDATION SUCCESSFUL IN THE UNITED KINGDOM

A 50 per cent improvement, at least, in dental caries in children up to the age of five years at a cost of tenpence a head a year is the possibility opened up by the recent publication of the first report on the fluoridation studies carried out in the United Kingdom during the past five years. It de-

scribes the studies which are being carried out at Watford, Anglesey and Kilmarnock and their respective control areas into the effect on the incidence of dental caries of adding fluorides to the public water supply. The report is concerned entirely with the deciduous dentition and the results refer only to children up to 7 years of age. The results for permanent teeth have not been reported as too few which had developed and erupted during the five years would be available for adequate comparison to be made.

The main points from the report are a 66 per cent reduction in caries of 3-year-old children, 57 per cent reduction in 4-year-olds and 50 per cent reduction in 5-year-olds. In addition the pattern continued in children aged 6, most of whose deciduous teeth had developed before the investigation began.

The dental study was accompanied by exhaustive enquiries into medical records and population statistics of areas in the United

Kingdom with naturally occurring high and low fluoride content in the water. These failed to reveal a health danger arising from drinking water containing fluoride at a level of 1 part per million. A close watch was kept by medical authorities during the five-year studies in Watford, Anglesey and Kilmarnock to find out if there was any natural hazard to health. The conclusion is that there is no danger in raising the fluoride content of water for drinking purposes to 1 part per million.

The Dental Health Committee of the British Dental Association plans to circulate to a wide section of the opinion-forming public a leaflet setting out the main points in the report and stressing the tremendous value of fluoridation as a dental health measure. The pamphlet will also ask groups throughout the country to request their members of parliament to press the government to take legislative action.

BOOK REVIEWS

SALIVARY SECRETIONS IN MAN

A. C. Kerr, Oxford, Pergamon Press Ltd., 1961. 86p. *Illus.* \$6.50

Interest in salivary function has been shown mainly by three groups of investigators with quite distinct objectives in view. The experimental psychologist, stimulated by Pavlov's work on the conditioned reflexes, has sought to study the effect of cortical and subcortical function on salivation. Dental research workers have studied salivary secretion and factors in saliva that might be related to dental and periodontal disease. Physiologists have approached salivary function with the view of further understanding the secretory process and its control. The studies published in this monograph were prompted by an interest in the action of

saliva on human oral and dental tissues. While such an investigation is primarily of interest to dentists, the new techniques developed and the results obtained should interest both physiologists and psychologists interested in the function of the salivary glands in man.

Much of the knowledge of salivary function has been derived from investigations in animals. While there are many examples of species difference in salivary glands, these differences are in the main anatomical. There are many physiological similarities, but the need for caution in the transference of functional concepts must always be kept in mind. For example, there is a widely held view that the concept of the conditioned reflex in dogs also applies to man. The thought and sight of food are believed to act as strong stimulants to the production of saliva. In well devised experiments to test this view, Kerr could find no experimental evidence to support this concept in man.

The experimental studies described in this monograph are related to conscious individuals. The chapter on the selection and development of methods for collecting salivary secretion quickly brings to the reader a realization of the difficulties inherent in studying salivary secretion, the need for careful investigation and the development of precise techniques. This is also true for the methods of measuring salivary flow.

Much work and care was necessary for the development of the concept of a resting flow of secretion from the major salivary glands. Such information was essential for the study of the various factors that may stimulate, inhibit, or have no effect on salivary flow. Of particular interest is the finding of the wide variation in salivary flow in individuals in the resting and stimulated states.

This book is well organized, the studies carefully devised and the results interpreted. It is particularly suitable for dental students and dental clinicians. This reviewer thoroughly enjoyed the book, found it enlightening, and has no hesitation in recommending *Salivary Secretions in Man*, to any one interested in this subject.

W. J. Linghorne

Chapters which deal with areas other than the dental field will also prove to be useful as well as interesting for the dentist who wishes to provide a comprehensive health service in co-operation with the physician. Particularly interesting in this respect are the chapters on the principles of the choice of drugs, local antiseptics antibacterial agents, relief of pain, anaesthetics, and sedatives and tranquillizers.

C. Reynolds

HANDICAPPED CHILDREN: PROBLEMS, PROGRAMS, SERVICES IN MICHIGAN

Proceedings of a conference conducted February 20-21, 1961 at the School of Public Health, University of Michigan. Ann Arbor, Continued Education Service, University of Michigan, 1961. 96p. Illus. \$1.00

DRUGS OF CHOICE 1962-63

W. Model. St. Louis, C. V. Mosby Co., 1962. 941p. \$14.50

The dentist will find this a valuable text from two aspects.

Firstly, the book is a guide to the usefulness of drugs in his own practice. There is no other publication which gives such a concise and unbiased opinion of the value and place of a drug in therapy. In an age when hundreds of new medicaments are being promoted to the practitioner every year, a reference book of this kind is almost essential in order to avoid expensive and dangerous trial and error.

Secondly, the text will prove useful in the treatment considerations of dental patients receiving medical care. Many of the drugs prescribed for patients undergoing medical treatment will affect the diagnosis and treatment plan of the dentist.

This monograph is a compilation of the papers presented at the Conference on Handicapped Children in Michigan, 1961. It presents a broad view of the complex and interrelated problems of the handicapped child and underlines the degree of co-operation and interdependence of services required to deal successfully with these problems. The roles of the health professions, government and voluntary agencies, the parents and the community are discussed.

Epidemiological, administrative and clinical aspects of selected cases are given to illustrate these points. In addition, programs and resources are outlined to suggest possible ways of planning a comprehensive approach to the problem.

The need for education, prevention, follow-up care and integration of services is stressed.

This monograph provides general background information related to the handicapped child and his care. It will be of particular interest to the dentist engaged in hospital, institutional, public health and cleft lip and cleft palate clinic services.

C. W. B. McPhail

IN MEMORIAM

JAMES HARVEY BURROWS — Dr. J. H. Burrows of St. Catharines, Ontario died on July 25, 1962. He was 61. Dr. Burrows was born in Seaforth, Ontario in 1901. He studied at the Royal College of Dental Surgeons of Ontario, graduating in 1924. Dr. Burrows was at one time associated with the dental clinic of the Niagara Peninsula Sanatorium. Surviving is his wife, Clarice Aileen Burrows.

GERARD CAISSE — Le Dr Gérard Caisse de Montréal, âgé de 38 ans, est décédé le 12 mai 1962. Il était né à Montréal en 1924. Il obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1948. Il avait été aussi clinicien de la section dentaire du Service de Santé de la ville de Montréal durant les dernières deux années.

RALPH WALDO EMERSON — Dr. R. W. Emerson of Willowdale, Ontario died on July 22, 1962. He was 88. Born in Toronto, Ontario in 1884, Dr. Emerson attended the Royal College of Dental Surgeons of Ontario, graduating in 1909. He was a former staff member of the Division of Dental Services of the Toronto Department of Public Health. From 1929 until recently, he was associated with the North York Township Department of Health, first as a dental officer and latterly as dental director. Dr. Emerson served with the Canadian Army Dental Corps from 1917 to 1919, and also as a captain in the 2nd Division of Royal Canadian Signals from 1929 to 1939. He is survived by his wife, Marjory Fraser Emerson.

EARL WEST FULLER—Dr. E. W. Fuller of London, Ontario died on June 2, 1962. He was 71. Dr. Fuller was born in London, Ontario in 1891. He studied at the Royal College of Dental Surgeons of Ontario and graduated in 1914.

CHARLES C. LUMLEY—Dr. C. C. Lumley of St. Thomas, Ontario died on June 9, 1962. Born in Iona, Dr. Lumley studied at the Royal College of Dental Surgeons of Ontario, graduating in 1899. He practised in St. Thomas from 1903 till 1927. Surviving are his son, Western Lumley; two daughters, Mrs. A. M. (Dama) Bell and Mrs. D. (Margaret) Gillies of Wheatley; a brother, Arthur Lumley of Evansville, Indiana; and eight grandchildren.

WILLIAM DAVID MacLEOD — Dr. W. D. MacLeod of Vancouver, British Columbia died on June 16, 1962. He was 62. Born in Vernon, Prince Edward Island in 1900, Dr. MacLeod studied at McGill University, graduating in 1925. From 1927 Dr. MacLeod practised in British Columbia. He is survived by his wife, Aline.

WILBUR HAMILTON McLAUGHLIN — Dr. W. H. McLaughlin of Dundas, Ontario died on June 13, 1962. He was 85. Dr. McLaughlin was born in Hamilton, Ontario in 1887. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1913. Dr. McLaughlin practised in Hamilton from 1920 until 1952, when he moved to Dundas. He was a former president of the Hamilton Dental Association as well as an honorary life member of the Royal College of Dental Surgeons of Ontario.

ALEXANDER HUGH McLEAN—Dr. A. H. McLean of Orillia, Ontario died on July 18, 1962. He was 87. Born in Barrie, Ontario in 1875, Dr. McLean received his early education in Toronto. He studied at the Royal College of Dental Surgeons of Ontario, graduating in 1897. He practised in Orillia, and was president of the Simcoe County Dental Association for two years.

He was also an honorary life member of the Royal College of Dental Surgeons of Ontario. He is survived by his wife, Maud Gillespie McLean.

ANGELBERT DESAULNIERS MILOT — Le Dr A.-D. Milot de Montréal, âgé de 66 ans, est décédé le 19 mai 1962. Il était né à Ste-Anne de la Parade, P. Qué. en 1895. Il obtint son diplôme en chirurgie dentaire à l'Université Laval en 1920.

WALTER MYERS RANDALL—Dr. W. M. Randall of Dauphin, Manitoba died on July 2, 1962. He was 29. Dr. Randall was born in Rosetown, Saskatchewan in 1932. He studied at the University of Toronto, graduating in 1960. He is survived by his wife, Margaret and parents, Mr. and Mrs. W. Randall of Dauphin.

ARTHUR PETER RUTHERFORD — Dr. A. P. Rutherford of Hawkesbury, Ontario died on July 15, 1962. He was 59. Dr. Rutherford graduated from the Chicago College of Dental Surgery (Loyola University) in 1902 and from the Royal College of Dental Surgeons of Ontario in 1903. He is survived by his daughter, Mrs. R. A. Cranston and a brother, Samuel H. Rutherford.

GORDON ANDREW STEWART—Dr. G. A. Stewart of Belleville, Ontario died on July 4, 1962. He was 62. Born in Exeter, Ontario in 1900, Dr. Stewart studied at the Royal College of Dental Surgeons of Ontario and graduated in 1924. He practised in Belleville from that time until his retirement in 1961. Surviving are his wife, Mary Stewart; a son, Rev. Robert H. Stewart of British Columbia; two grandchildren, Janet and Mark Stewart; and two sisters, Mrs. J. K. Robertson of Oakville and Mrs. A. D. Niles of Cooksville.

CLAYTON DARIUS SUMNER—Dr. C. D. Sumner of Quesnel, British Columbia died on June 16, 1962. He was 72. Dr. Sumner was born in Lynden, Washington, U.S.A. in 1890. He studied dentistry at the North Pacific Dental College (University of Oregon), graduating in 1918.

DONALD CHARLES WICKENS — Dr. D. C. Wickens of Windsor, Ontario died on July 16, 1962. He was 37. Dr. Wickens was born in Windsor in 1925. He studied at the Faculty of Dentistry, University of Toronto and graduated in 1951. Dr. Wickens was president of the Essex County Dental Association from 1958-59. He served with the Royal Canadian Air Force from 1943 to 1945. Surviving is his wife, Mrs. D. C. Wickens.

C.D.A. Brief to Royal Commission on Health Services • A limited number of copies of the brief submitted by the Canadian Dental Association to the Royal Commission on Health Services are available at Association headquarters. Copies may be secured on request to the Secretary, Canadian Dental Association, 234 St. George Street, Toronto 5, Ontario.

Transactions of the Canadian Dental Association • The Association's *Transactions* contain reports of activities of the various bureaux, councils and committees. Published in English and in French after every meeting of the Board of Governors, it is recommended reading for all Canadian dentists.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
Sept. 7-9, 1962	Northern Ontario Dental Association	Empire Hotel, Timmins	Dr. J. Shaw	137B, 3rd Avenue, Timmins, Ontario
Sept. 19-22, 1962	IIIrd Congress of the Yugoslav Dental Association	Ljubljana, Yugoslavia	Dr. V. Krustic	2 Zaloska, Ljubljana, Yugoslavia
Sept. 23-25, 1962	Eastern Ontario Dental Association	Chateau Laurier Hotel, Ottawa	Dr. J. Berman	226 O'Connor Street, Ottawa, Ontario
Oct. 9-11, 1962	2nd Canadian Conference on Dental Research	Banff School of Fine Arts	Dr. C. W. B. McPhail	Faculty of Den- tistry, Univer- sity of Alberta, Edmonton, Alberta
Oct. 15, 1962	H. K. Box Memorial Lecture	Faculty of Dentistry, University of Toronto	Dr. C. H. M. Williams	124 Edward Street, Toronto 5, Ontario
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Quebec
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Super- ior Street, Chicago, Illinois
19-25 novem- bre, 1962	XXXVies Journées dentaires inter- nationales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre- Haret, Paris 9e, France
Nov. 22, 1962	Academy of Dentistry, Toronto, Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario
Feb. 16-23, 1963	Second Caribbean Dental Convention	Trinidad Hilton Hotel, Port-of- Spain, Trinidad	Dr. A. V. Awon	43-45 Frederick Street, Port-of- Spain, Trinidad

POSTGRADUATE AND REFRESHER COURSES (CANADA)

ALBERTA—A postgraduate course in DENTAL PRACTICE ADMINISTRATION will be offered at the Faculty of Dentistry, University of Alberta, October 11-13, 1962. The subject matter will cover the needs of the dentist in practice administration, gain and loss of patients, office records, appointment control, fees, case presentation, office design and layout and auxiliary personnel. At the beginning of the course a short survey will be completed by candidates. This will be used for a discussion of group problems. The course will be directed by Dr. R. K. Stinaff. Tuition fee \$60. Enquiries and applications should be directed to the Clinical Director, Faculty of Dentistry, University of Alberta, Edmonton, Alberta.

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institution.

L'Association Dentaire Canadienne.

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Diagnostic précoce des lésions précancéreuses de la cavité buccale

par GUY MARANDA, D.D.S., Québec, P.Qué.

Le cancer, comme nous le savons, est une des maladies les plus fréquentes et la plus terrible aussi. L'humanité d'aujourd'hui a à y faire face. Si nous considérons la responsabilité du dentiste dans le diagnostic et la prévention des lésions malignes de la cavité buccale, des statistiques faites à l'échelle nationale aux Etats-Unis nous indiquent que 5.2% de tous les cancers sont fatals chez l'homme

et que 1.2% de ce même type, chez la femme, proviennent de la cavité buccale.¹

Le dentiste possède une place de choix pour examiner la cavité buccale de façon entière et complète et pour y déceler les changements précoces dans la coloration des muqueuses, bien avant qu'un développement vers la dégénérescence maligne ait pu s'effectuer.²

La raison pour laquelle une connaissance complète des lésions précancéreuses de la cavité buccale est de prime importance pour le dentiste, c'est qu'il a les moyens de diagnostiquer, de façon pré-

Travail qui a valu à son auteur le deuxième prix au Concours 1962 du Mémorial de Guerre de l'Association dentaire canadienne.

TABLEAU 1 Pourcentage de patients avec cancers buccaux qui ont consulté un dentiste avant un médecin.⁴

Site primaire du cancer	Nombre total de patients interviewés	Pourcentage approximatif des patients ayant consulté un dentiste avant un médecin
Gencive	114	65
Palais	106	45
Langue	139	35
Muqueuses — joues	113	35
Plancher — bouche	125	27

coce, un cancer buccal; et quand il s'agit du site de cancer, il est à l'avant-garde de la lutte contre cette maladie.³

Si le dentiste consulté au début, néglige l'occasion de diagnostiquer un cancer, cette négligence vaut une perte irréparable parfois quant au temps.

Dès que le processus malin s'est installé, le procédé est rapide et, après quelques mois de maladie seulement et avec l'emploi des moyens de traitements les plus modernes, l'on obtient une guérison que dans un faible pourcentage des cas. Par exemple, pour le cancer de la langue, on rapporte que 66.6% des malades n'offrent pas de chance favorable de guérison bien que le traitement soit commencé depuis deux mois seulement après avoir reconnu les premiers symptômes.⁵

De façon générale, on peut dire que la guérison de toutes sortes de cancers de la cavité buccale est deux fois plus rapide, si un traitement radical est appliqué au début de la maladie.⁶

On réalise donc que le dentiste détient l'occasion de pouvoir palper et inspecter les moindres replis de la cavité buccale. Quand un patient se présente pour un examen de routine, le dentiste se doit de faire un examen de toute la cavité buccale, sans créer chez le patient une cancérophobie, qui pourrait se déclencher, si le même examen était fait par un médecin. Cependant, il faut bien insister sur l'examen total de la cavité, parce que le dentiste doit inspecter la gencive, la langue avec ses bords latéraux, les replis

internes de la joue, tout en n'oubliant pas le palais et le plancher de la bouche; cette inspection se pratique facilement par la palpation.⁶

Le dentiste, à cause de son doigté et aussi de son habitude de travailler sur de petites choses, est plus à même de bien faire cet examen; d'ailleurs, sa formation, ses nombreuses lectures et les congrès auxquels il assiste, le rendent plus apte à bien remplir son rôle de dépisteur.

Dans tous les examens, le dentiste doit faire preuve d'un grand indice de doute⁶ et, si ce doute est fondé, il devra poser ce diagnostic comme possible, plutôt que d'attendre et voir, car le pronostic du cancer dans la cavité buccale n'est pas particulièrement favorable et la seule possibilité d'une amélioration réside dans le diagnostic précoce (Voir tableau 2).⁴

Comme le disait Martin,¹ une lésion se voit mieux si elle est sur la gencive que dans un repli muqueux; mais le dentiste doit tout examiner et c'est son rôle de découvrir toute lésion suspecte ou changement dans la texture des muqueuses et de mettre à profit toute sa responsabilité tant dans le diagnostic et la prévention que dans le traitement, de telle sorte qu'il accomplisse son travail comme un expert de la cavité buccale.⁷

DIAGNOSTIC DES LÉSIONS

Nous pouvons donc affirmer que c'est une nécessité absolue pour les dentistes de se familiariser avec les signes du cancer et des autres états pathologiques des

TABLEAU 2 Retard dans le diagnostic des cancers buccaux chez les patients ayant consulté un dentiste avant un médecin.⁹

Site primaire du cancer	Nombre total de cas	Probabilité de cancer reconnu par le dentiste		Probabilité de cancer non reconnu par le dentiste	
		Nombre de cas	Temps moyen entre la visite au dentiste et au médecin	Nombre de cas	Temps moyen entre la visite au dentiste et au médecin
Gencive	68	21 (31 %)	3.5 semaines	47 (69 %)	5.0 mois
Palais	39	17 (44 %)	4.0 semaines	22 (56 %)	13.0 mois
Langue	34	16 (47 %)	4.0 semaines	18 (53 %)	5.5 mois
Muqueuse — joue	27	14 (52 %)	4.0 semaines	13 (48 %)	11.0 mois
Plancher — bouche	29	18 (62 %)	1.0 semaine	11 (38 %)	5.0 mois
Nombre total de patients	197	86 (44 %)	3.0 semaines	111 (56 %)	7.0 mois

muqueuses buccales. Il n'y a aucun doute que cette distinction devrait être étudiée de façon plus élaborée dans les cours sous gradués et post-gradués. Comme le voulait Darlington,⁸ on enseigne les divers aspects du cancer buccal dans les écoles dentaires.

Il va de soi cependant qu'un diagnostic présuppose une bonne histoire du cas pour obtenir de multiples renseignements. En étant analysés de façon précise et avec discernement, cette étude apporte de la lumière sur les lésions présentes.

Pour ce faire, il est bon de suggérer un questionnaire adapté à un dentiste qui voit pour la première fois un patient se plaignant d'un mal à la bouche et que l'on suspecte être du précancer ou du cancer. Après avoir rempli une fiche ordinaire, on demande:⁹

1. Quelle est la plainte actuelle?
2. Depuis quand ceci est-il noté?—Préciser l'époque.
3. Opinion du patient au sujet de sa lésion. Ceci ouvrira l'état d'esprit du patient.
4. Quels symptômes présents au début et maintenant?
—croissance
—guérison
5. Quel est la cause première du trouble? Même si ceci semble illogique,

elle renseigne et aide à mieux comprendre le patient.

6. Est-ce qu'il y a d'autres consultations de faites?

7. Examens faits antérieurement — examen physique, examen du sang, radiographie, biopsie, etc.

8. Quels sont les conseils déjà reçu au cours d'une autre consultation?

9. Ont-ils été suivis?

10. Traitement déjà fait.

11. Référé par qui?—Prendre note des noms et adresses de ces collègues et s'y référer.

A l'aide de cette histoire médicale et aussi sachant que le diagnostic défini d'une condition maligne n'est pas possible s'il est basé sur l'évidence clinique seulement, un diagnostic ne sera établi qu'après un examen microscopique provenant d'une biopsie et d'autres examens ci-bas discutés.

Le docteur John Morton précise "qu'aucun diagnostic ne peut être fait sans microscope et, bien plus encore, le problème de la biopsie relève du spécialiste,¹⁰ en ce sens, qu'il doit faire l'interprétation du morceau de tissu enlevé et la rédaction du rapport".

Quoique la biopsie demeure encore le moyen le plus sûr de poser un diagnostic, il ne faudrait pas pour autant passer sous silence d'autres méthodes, qui, tout en étant simples, sont utiles et donnent de très bons résultats.

Un examen attentif est de grande importance et il doit se faire à l'aide d'une source de lumière intense. L'examen doit inclure: le facies en général, les lèvres, les gencives, les dents, les tissus durs et mous, la langue, le plancher de la bouche, le naso-pharynx et les ganglions cervicaux. Une attention toute particulière doit être portée aux asymétries, ulcérations et toute autre anomalie dentaire. Parfois, l'aspect de ces lésions semble normal sans aucune apparence dangereuse, mais cette forme peut subitement changer et alors il sera peut-être trop tard; en joignant à cet examen une bonne histoire de cas, il est facile de poser un diagnostic plus vif, précis et précoce.

Comme autre moyen d'examen, il ne faudrait pas oublier la palpation faite avec les doigts recouverts de gants caoutchoutés. Avec un peu d'expérience, l'examineur réussit à déterminer la cause exacte d'une enflure: un traumatisme ou une infection, par exemple. Le caractère vrai d'une lésion ne sera peut-être pas toujours connu par la palpation, mais en se servant des autres moyens, le dentiste est en mesure de poser un bon diagnostic.

Dans les lésions fluctuantes ou semi-fluctuantes, il est aussi facile de faire une aspiration au moyen d'une seringue munie d'une aiguille afin de déterminer la nature exacte du contenu.

Pour obtenir un bon diagnostic, il ne faudrait pas oublier l'apport des radiographies. Celles-ci aident à déceler un améloblastome, seule lésion osseuse précancéreuse pouvant dégénérer en pathologie plus avancée mais qui, prise à un stage jeune, n'oblige pas à une chirurgie trop mutilante.

Cette lésion, macroscopiquement, n'offre que très peu d'évidence; elle se présente surtout à l'angle de la branche montante de la mandibule avec un gonflement caractéristique de la table interne de l'os. L'enflure est un peu bosselée, irrégulière avec des saillies dures ou fluctuantes. A la radiographie, cette lésion apparaît comme une cavité semblable à celle d'un kyste, différant toutefois par son ap-

parence de "grappe de raisins" ou "bulles de savon" qui sont dues aux cloisonnements osseux résultant de l'accolement de plusieurs petits kystes. Cependant, cette lésion peut aussi être unilobulaire comme un grand kyste et alors ne possède pas de caractéristique précise.

Donc, c'est à l'aide de la radiographie que cette lésion osseuse précancéreuse peut être confirmée, si le dentiste perçoit une certaine enflure à l'angle de la mandibule.

Une autre technique, autrefois appliquée en médecine interne surtout, peut s'employer: la cytologie, qui consiste à examiner au moyen de frottis effectués à partir de lésions douteuses. Elle commence à faire son apparition comme moyen de compléter un diagnostic. Cette méthode, chez les dentistes, est encore à l'état de perfectionnement et, à date, elle n'est qu'un complément à la biopsie; elle sert à déterminer de façon exacte le stage même de la lésion et à confirmer un diagnostic.¹¹ Quoique cette méthode demande encore de la recherche surtout quant à la façon de prendre les frottis, elle permet de poser un diagnostic différentiel très précis, comme, par exemple, mettre en évidence la différence existant entre une guérison résiduelle de la radionécrose et aussi d'un carcinome.¹² Toutefois, cette méthode demande l'examen de plus d'un frottis, si les signes cytologiques d'une inflammation viennent à persister ou à se développer. Il fut aussi suggéré que cette méthode de cytologie buccale s'emploie pour déceler des carcinomes précoces et des lésions pré malignes chez des patients asymptomatiques possédant des lésions d'apparence peu grave, surtout quand elles se présentent sous formes d'ulcères ou de tissu de granulation.¹³ Somme toute, cette méthode est un excellent complément dans la détection des lésions buccales et des cancers. Il se peut, qu'au cours des années passées, on ait craint de dire qu'une lésion était peut-être maligne de peur de produire un mauvais effet chez le patient; mais en vue d'une meilleure connaissance d'une lésion, ceci ne doit pas être une raison

valable à l'hésitation. L'ablation d'un petit morceau de tissu et l'examen du laboratoire sont des procédures très simples qui doivent être employées encore plus souvent par les dentistes.

Afin de mieux étudier les lésions précancéreuses, il faut en donner une division qui les groupent toutes:

1. Celles qui, de bénignes qu'elles sont, subissent dans presque tous les cas une dégénérescence maligne.

2. Celles qui sont liées à une irritation mécanique ou chimique ou certaines conditions de propreté buccale.

3. Celles qui naissent de changements physiologiques dans les muqueuses buccales.

Grâce à l'observation clinique et à la recherche expérimentale, on peut établir le fait qu'un certain nombre de conditions ou de changements ont une tendance au développement ultime: le cancer. Ces données ont de l'importance, même si strictement, l'origine locale d'une lésion cancéreuse est ambiguë.¹⁴ On prétend qu'une diathèse mal définie ou un facteur constitutionnel est d'importance étiologique.⁵

Toutefois, quant à ces conditions, "il doit être bien compris qu'une lésion précancéreuse n'est pas nécessairement la cause du cancer. Le précancer est un stage ou un symptôme avertisseur indiquant que le développement du cancer est plus poussé dans certain cas ou à un endroit précis que dans une condition normale où il n'existe aucun de ces signes ou symptômes".

L'emploi du terme précancer est sujet à la controverse. Il n'y a aucun doute que le terme est mal employé, si on l'applique aux conditions dans lesquelles une cellule typique du cancer est démontrée par examen histopathologique, bien qu'aucune invasion de la membrane basale, ni aucune perméabilité lymphatique n'ait lieu. Divers termes sont employés pour distinguer un cancer pré-invasif d'un vrai cancer d'une part et d'autres lésions précancéreuses d'autre part.⁶

Le terme précancer, tel qu'employé ici, ne se réfère pas à toutes sortes de lésions où se retrouvent les caractéristiques d'un cancer typique. Il ne se réfère pas, non plus, au terme employé pour indiquer que la lésion peut devenir maligne. Les lésions précancéreuses sont celles qui, après un examen minutieux et microscopique, prouvent qu'il n'y a pas de preuve de croissance éventuellement maligne. L'expérience montre qu'il nous faut assumer que, dans un certain pourcentage des cas, des carcinomes vont se développer; il existe une plus grande vraisemblance qu'un tel cas se produise que s'il n'y avait que du tissu sain à cet endroit.⁶

Dans la cavité buccale, il nous faut considérer tous les tissus épithéliaux surtout, mais sans oublier les autres tel que: le conjonctif et les vaisseaux.¹⁵

DÉGÉNÉRESCENCE MALIGNE PROVENANT D'UNE TUMEUR BÉNIGNE DE LONGUE DURÉE

Le premier groupe de lésions précancéreuses comprend les tumeurs bénignes de la cavité buccale. Comme toute autre tumeur de l'organisme, elles peuvent subir une dégénération maligne à un certain moment de leur existence. Ceci peut même se dire des simples ulcères chroniques ou inflammatoires causés par les organismes de Vincent ou résultant d'un traumatisme d'origine tuberculeuse ou syphilitique. Il serait bon de surveiller les lésions du type verrue et les tumeurs grumeleuses qui ordinairement suivent les infections mycotiques, surtout la blastomycose et l'actinomycose.⁶

Un abcès dentaire ou périodentaire chronique peut produire un kyste radiculaire qui, s'il n'est pas traité, est susceptible de prendre des caractères malins,³ dans le cas d'un abcès, il sera bien diagnostiqué par une assez grande fluctuation, mais cette condition ne doit pas être sujette à l'erreur par sa ressemblance assez profonde avec un cancer de la gencive ou du sinus. C'est alors que la radiographie montre exactement le caractère de la lésion en indiquant ou non une destruc-

tion osseuse. Une infection ou une irritation entre les dents, sur la gencive, peut finalement produire une tumeur fibreuse, genre épulis, ressemblant au cancer et qui plus tard, peut le causer.¹⁶

Les tumeurs bénignes, les plus ordinairement rencontrées en bouche, sont maintenant énumérées et leur description permet de les reconnaître plus facilement.

L'hémangiome produit une couleur blanchâtre et est présent à la naissance. Elle est une tumeur bénigne des vaisseaux sanguins qui se rencontre surtout sur la peau, mais se voit aussi sur les muqueuses buccales.

Le fibrome peut être rencontré partout sur les muqueuses buccales, mais se voit surtout sur le bout de la langue. Il a une surface lisse et sa base est pédiculée.

Le granulome se rencontre souvent sur les gencives et entre les dents. On l'appelle "tumeur de grossesse" chez les femmes enceintes et, après l'accouchement, il disparaît ou bien se transforme pour former un fibrome ou un épulis fibreux.

L'adénome est une petite prolifération des acini dans la parotide, mais il se distingue toutefois difficilement de toute autre tumeur maligne de la parotide.

Le papillome se présente comme une excroissance possédant des projections en forme de doigts donnant comme résultat l'apparence d'un choux-fleur. Cette lésion très circonscrite et pédiculée à l'occasion se rencontre dans la bouche, sur la langue, les muqueuses buccales, la gencive et le palais dans la région de la luette.

Le myxome est une lésion assez rare représentant une dégénération myxoémathéuse dans un néoplasme fibreux.

Le mélanome et les nevi pigmentés s'associent parfois à la leucoplasie et se voient surtout chez les nègres. Ce sont des lésions très circonscrites et faciles à reconnaître, mais elles peuvent se présenter parfois sans coloration.

D'une façon plus rare mais bien caractéristique dans leur apparence, on remarque les tumeurs mixtes des glandes salivaires et des cellules géantes de la mandibule.

Cette description assez succincte permet de réaliser la grande variété des processus tumoraux pouvant prendre naissance dans la cavité buccale. Dès le début, ces lésions sont ordinairement progressives et peuvent d'elles-mêmes dégénérer vers la malignité ou bien donner naissance au développement d'une croissance cancéreuse.

Le dentiste, au cours de son examen, doit suspecter toute enflure persistante des lèvres et de la muqueuse buccale ou nasopharyngienne.

Bien qu'il soit impossible cliniquement ou microscopiquement de déterminer le moment exact où la tumeur cesse d'être bénigne pour devenir maligne, la malignité doit être redoutée chaque fois que l'on remarque dans une tumeur, jusqu'à présent considérée comme bénigne, les changements suivants: pigmentation augmentée, croissance rapide, excoriation abondante, saignement, fissure, ulcération, et induration.¹⁷

Comme conclusion à ce résumé de ce groupe de lésions, il faut bien observer les ulcères, les lésions suspectes et les changements dans l'apparence des muqueuses et leur consistance. La biopsie permettra aussi de poser un diagnostic précoce.

IRRITATION CHRONIQUE ET CERTAINES CONDITIONS D'HYGIÈNE BUCCALE

Un second groupe de lésions précancéreuses est causé par des conditions qui produisent l'irritation chronique au moyen de divers mécanismes qui sont enclins à produire la malignité d'une lésion.

L'irritation chronique peut provenir de divers agents, en fait, elle peut être physique ou chimique.

Parmi les irritants chimiques, le tabac sous toutes les formes est l'agent le plus souvent cité. Auparavant, on attribuait à son usage exagéré l'apparition de la leucoplasie.⁶ Plus récemment, on a interprété la leucoplasie et toutes les conditions semblables comme des formes de changements dégénératives dans la muqueuse, non produites par le tabac mais aggravées

par son usage. Le facteur spécifique de cette irritation est attribué¹⁸ à un composé carcinogène (benzpyrene) ou à la présence d'arsénic dans le produit durant la culture comme arrosage.¹⁹ Cependant, il est permis de douter que les sortes les plus fortes de tabac sont plus aptes à produire une irritation.²⁰ Bien plus, il est tout à fait improbable que le tabac seul produise le cancer. Cependant, comme le dit Lund,²¹ les trois principaux facteurs responsables d'un carcinome de la muqueuse buccale sont: le tabac, la syphilis et les dents cassées. Au moins deux de ces facteurs doivent agir sur une période de temps assez longue pour produire la malignité. Alors, il faut bien surveiller toutes les lésions suspectes, car si ces facteurs sont en cause, on aura de la facilité à poser un diagnostic précoce.

En plus du tabac, on remarque aussi que les teintures, les pigments dans les rouges à lèvres, les cosmétiques variés, les aliments beaucoup assaisonnés et les rince-bouches concentrés sont des irritants susceptibles de produire ces lésions. Le soleil sur les lèvres est un autre facteur étiologique. De plus, les dentiers mal ajustés ou faits de vieux matériaux irritent les muqueuses. En examinant une prothèse, il faut toujours considérer le matériel lui-même; par exemple, la vulcanite, après un certain temps, devient poreuse et, même à la loupe, elle montre des fissures entre les dents. Ces petites ouvertures accumulent des débris de nourriture impossibles à nettoyer et ces débris agissent comme irritants; ils amènent des lésions plus ou moins graves pouvant être diagnostiquées précocement.

Les agents mécaniques donnent aussi lieu à diverses formes d'irritation. Des blessures peuvent être causées par des accidents mineurs ou par des habitudes, comme tenir toutes sortes d'objets dans la bouche. Il ne faut pas oublier les blessures produites par des instruments chauffés, du goudron chaud, du verre brisé; des brûlures graves se produisent soit par accident ou bien, plus rarement, par un électrocauthère en tentant d'enlever des excroissances surtout sur la

lèvre.²² Souvent, la cicatrice d'une blessure antérieure ou une morsure à la lèvre provoque une lésion qui, si laissée à elle seule, peut dégénérer en cancer.

Plusieurs facteurs dentaires agissent comme excitants des lésions traumatiques pouvant développer des lésions malignes. Ces irritants sont nombreux et variés. On comprend facilement que les bords latéraux de la langue montrent des lésions chez les patients qui ont des dents brisées ou usées, soit par l'attrition ou l'abrasion.⁵

La relation qui existe entre une simple blessure causée par une dent brisée et le développement d'une lésion est tellement évidente que, depuis le temps d'Hippocrate, les troubles dentaires sont considérés comme directement carcinogènes. Dans la plupart des cas, on peut démontrer la présence de plus d'un irritant, même si des examens thérapeutiques sont faits pour déterminer l'étiologie significative des divers facteurs produisant des réactions semblables dans les muqueuses buccales.¹⁵

Toutefois, on note que des troubles dentaires se rencontrent chez des patients édentés; mais chez ces derniers, les symptômes n'apparaissent pas d'une façon aussi simple. Il y a quelques années, à la suite d'un travail fait à la clinique Mayo, Figi²³ rapporte, en guise de conclusion, que les excroissances cancéreuses de la cavité buccale "sont rarement excitées et quand on les voit à l'examen, ils apparaissent inactives". Martin,¹ dans un ouvrage un peu plus récent, dit que la plupart des patients du Memorial Hospital de New-York, atteints de lésions cancéreuses, sont étendus. Mais quels qu'en soient les faits, on peut s'aventurer à conclure que:

1. suivant les connaissances actuelles de la dégénération maligne, aucun facteur unique causant une irritation chronique ou un traumatisme constant, peut être tenu responsable du développement ultime d'une lésion cancéreuse.

2. des blessures répétées peuvent engendrer une suite, de changements dans le tissu buccal et, tôt ou tard, une dégénérescence maligne.

L'examen d'une lésion suspecte doit toujours tenir compte de la situation exacte de cette lésion par rapport à l'aspect général de la bouche et s'assurer, par un questionnaire habile et adéquat, de l'origine, de la persistance et de toutes les caractéristiques de la lésion.

Les appareils de prothèse complets ou partiels sont souvent des causes d'irritation. Dans une série de cas,²⁴ on remarque que 31% des patients portent des prothèses mal ajustées. Cependant, l'on doute encore de l'origine exacte de ces lésions précancéreuses; on se demande si elles peuvent être attribuées au frottement sur la crête alvéolaire ou sur les muqueuses. Parfois le contraire peut être vrai, c'est-à-dire une excroissance se développant dans les tissus adjacents à la prothèse, non en contact direct avec elle, peut produire un changement dans son contour et, comme conséquence, une mauvaise adaptation de la pièce.¹

Alors, chez ces édentés, toujours bien penser à la possibilité d'irritation et examiner les muqueuses.

L'hygiène de la bouche aide aussi à diagnostiquer une lésion. D'après Robinson,¹⁶ les ulcères et fissures, qui sont des lésions précancéreuses, se développent mieux dans un milieu malpropre où règne un manque d'hygiène à cause du grand nombre de facteurs aidant au développement de ces lésions.

CHANGEMENTS PHYSIOLOGIQUES DANS LA CAVITÉ BUCCALE

Ce troisième groupe de lésions précancéreuses inclut un certain nombre de changements sur les muqueuses. On serait porté à croire que des troubles dentaires variés contribuent grandement à leur développement. Il faut néanmoins considérer ces lésions indépendamment, puisqu'elles proviennent non seulement d'une cause locale mais aussi d'une maladie organique. Une plus grande compréhension de ce genre de lésion présuppose une appréciation des influences qui agissent entre la stimulation locale et l'antécédent constitutionnel.⁴

Voici diverses conditions précancéreuses qui montrent une dégénérescence des muqueuses buccales:

La leucoplasie, sans doute la principale et la mieux connue, fait l'objet d'une étude particulière un peu plus loin.

La verrue est une excroissance épithéliale causée par un virus. Elle est toujours pédiculée en forme de chou-fleur dont les pointes se dirigent vers le centre.

L'atrophie et l'hypertrophie des papilles linguales situées sur les bords latéraux de la langue. Ces papilles, antérieurement à la jonction avec les piliers, peuvent être plus grosses chez certains et, à l'examen personnel, un individu peut méprendre cette condition pour du cancer. Une lésion peut se développer à cet endroit, mais elle ne sera pas bilatérale, ni indurée ou ulcérée. Le dentiste doit se familiariser avec les diverses variétés de papilles.

L'hypertrophie fibreuse des gencives se voit surtout chez les cas de dentiers mal ajustés. Se rencontre aussi chez les édentés au maxillaire supérieur, mais qui possèdent les antérieures du bas d'où malocclusion et hypertrophie guinale.

La chéilose est une condition produite à cause d'un manque du complexe B. Elle s'étend horizontalement en comprimant les muqueuses et la peau aux coins de la bouche. Cet état peut aussi résulter d'une perte de dimension verticale formant de gros plis au coin de la bouche; ceux-ci deviennent massérés à cause de présence constante de salive, à cet endroit.

Le myoblastome se rencontre surtout dans la langue, à sa partie dorsale, et ressemble au fibrome. Il est caractérisé par un néoplasme intra-musculaire.

La syphilis cause une glossite et une stomatite chronique. Ces lésions sont une manifestation de la syphilis qui dure depuis plusieurs années. Si l'irritation chronique est un facteur important dans le cancer, il doit y avoir une plus grande incidence de syphilis chez les patients atteints de tumeur maligne de la cavité buccale et ceci est prouvé par des statistiques. Quand le cancer et la syphilis sont associés, ils sont indépendants l'un de

l'autre. La syphilis est dans un état latent qui n'affecte pas la santé du patient.

Les lésions de la tuberculose se caractérisent par une douleur vive, lésion tendre et non indurée avec une surface finement jaunâtre. Ces ulcères tuberculeux se produisent par une implantation secondaire des bacilles provenant de crachats des patients atteints de tuberculose pulmonaire. Le diagnostic se pose en faisant une biopsie de l'ulcère. Le pathologiste l'interprétera comme de la tuberculose et sera confirmé par une radiographie de la poitrine et un examen des crachats.

De plus, à cette liste, on peut ajouter toutes ulcérations, érosions qui, depuis un mois ou plus, ont résisté à des mesures simples de traitement. Toutes ces conditions ci-haut énumérées doivent être considérées comme précancéreuses.

Il est assez facile de méprendre une de ces lésions pour une autre ou bien tout simplement ne pas la suspecter; alors, pour remédier à cet état, il faut effectuer un rappel de l'histologie comprenant une mise au point indiquant les changements produits d'une néoplasie bénigne précancéreuse jusqu'à un cancer vrai.

Toutes ces lésions dégénératives sont hyperplasiques. Elles contiennent plus de cellules que le tissu original.²⁵ Histologiquement, une série de changements peut être observée:²⁶

1. hypertrophie de la couche kératinisée
2. fixation de la couche basale
3. hypertrophie de l'épithélium
4. infiltration cellulaire
5. vascularisation augmentée
6. oedème.

Ces changements, précurseurs d'une dégénération maligne, doivent être surveillés pour faire un diagnostic précoce.

A ce stage hyperplasique, il y a diminution dans l'activité cellulaire des muqueuses. A la suite de cette diminution, on conclut que c'est précisément au changement pathologique de l'environnement cellulaire que des facteurs, auparavant inoffensifs, peuvent devenir tumo-

raux et, qu'en conséquence, les cellules hyperplasiques deviennent néoplasiques.²⁷

On admet généralement que la transformation maligne se produit non pas partout dans la lésion hyperplasique, mais dans un ou plusieurs petits groupes de cellules; cependant, on ne sait pas dans quelle cellule ceci se produit, ni le temps de la production.²⁵

Le développement pris à son début semble plutôt précaire. Par la suite, on sait qu'il devient très envahissant et même métastatique. Il paraît y avoir, au tout début, des changements néoplasiques primaires avant que la tumeur ne devienne plus agressive et dégénérative. Cependant, dans ce changement, il ne faut pas se laisser leurrer par le temps; la période n'est pas la même pour tous, elle peut varier d'un individu à un autre.²⁸ Ce facteur est de très grande importance. Une excroissance jeune n'est pas seulement petite, mais constitue un danger moindre parce que la plupart du temps, ce n'est que bénin et la lésion est au stage précancéreux. Les analyses de laboratoire permettent d'empêcher les cellules de se diviser et du fait même de circonscrire la maladie.

En de nombreuses occasions, l'examen histologique d'un morceau de tissu provenant d'une muqueuse dégénérée démontre un arrangement qui ressemble à la véritable néoplasie.²⁹ De plus, en de nombreux cas d'irritation prolongée, il n'y a pas d'évidence de cancération,³⁰ même si des croissances malignes débutent dans un tissu, auparavant sain, pour devenir par la suite agressives, quelques mois après l'apparition des premiers symptômes. C'est au stage initial, c'est-à-dire, quand la lésion donne encore l'aspect précancéreux, que le traitement se fait le mieux et que toute lésion doit être diagnostiquée.

LEUCOPLASIE

Parmi les lésions hyperplasiques de la muqueuse buccale, on doit s'attarder un peu plus sur une vue en particulier: la leucoplasie, qui se rencontre sur toutes les



FIGURE 1 Leucoplasie en phase jeune. (D'après MacComb: Postgrad. Med. 27:349, mars 1960.)

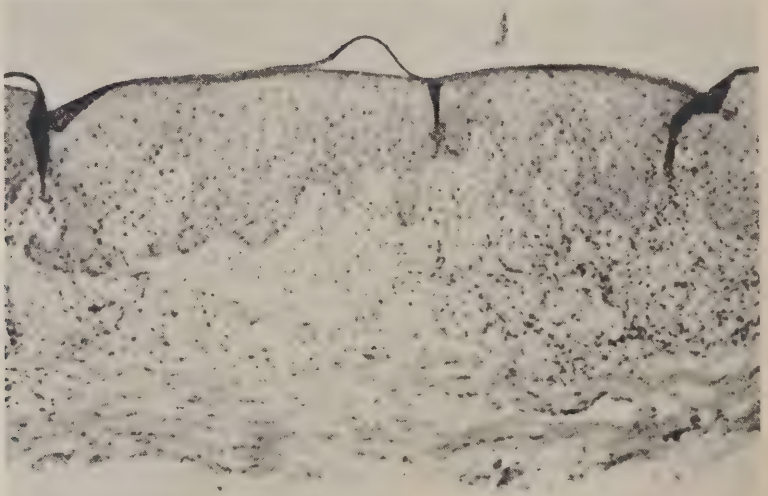


FIGURE 2 Photomicrographie de la leucoplasie en phase jeune. (D'après MacComb: Postgrad. Med. 27:349, mars 1960.)

muqueuses du corps. Si cet aspect est considéré de plus près, on peut remarquer qu'il y a une tendance inhérente à l'hyperkératose se manifestant à la suite d'une irritation locale.³¹

Leucoplasie veut dire plaque blanche. C'est une lésion surélevée sur les muqueuses des orifices du corps. Dans la cavité buccale, elle est connue depuis longtemps comme une condition précancéreuse.³²

Afin de poser un meilleur diagnostic, il est nécessaire d'examiner les trois genres de leucoplasie pouvant se rencontrer en bouche. Tout d'abord, la réaction initiale des muqueuses à l'irritation est l'hyperhémie, suivie du blanchiment des muqueuses et de l'hypoplasie ou excroissance des cellules de surface. La plaque non élevée, non ulcérée, lisse, ne donne pas de symptôme et c'est la véritable forme de leucoplasie (Figure 1). De

FIGURE 3 Leucoplasie en phase intermédiaire. (D'après MacComb: Postgrad. Med. 27:349, mars 1960.)

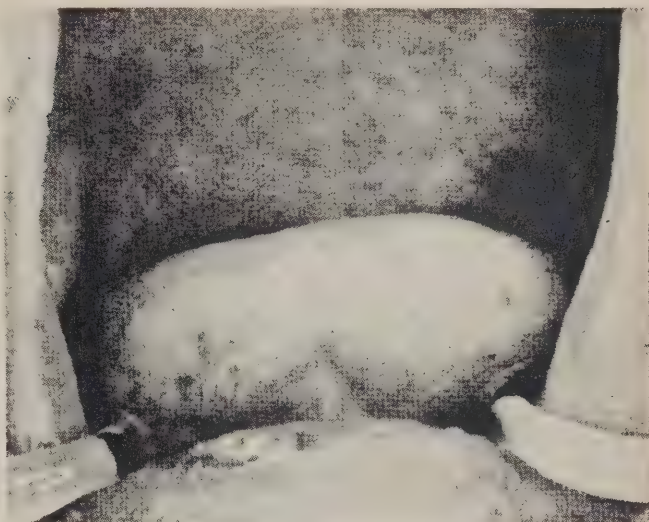
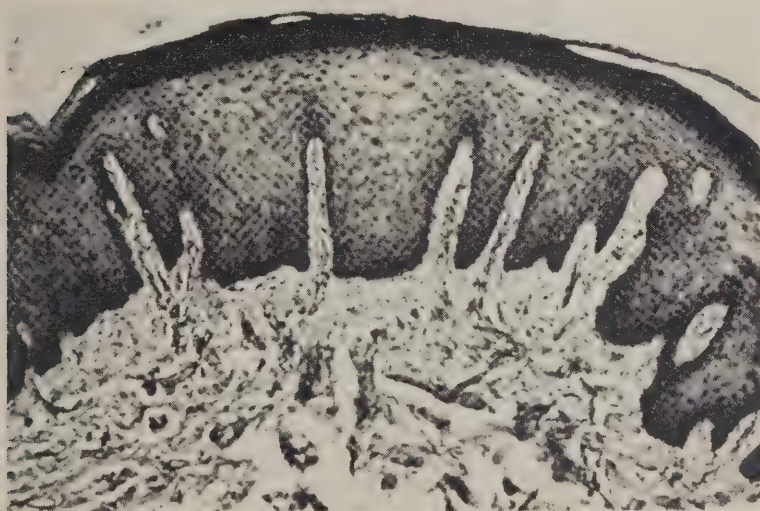


FIGURE 4 Photomicrographie de la leucoplasie en phase intermédiaire. (D'après MacComb: Postgrad. Med. 27:349, mars 1960.)



3

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telles conditions sont habituellement découvertes par le dentiste. Ce genre de leucoplasie peut être le précurseur d'une forme avancée (Figure 2) où les cellules basales ne sont plus parallèles et où une mince couche de tissu parakératotique se forme à la surface.

Le second genre est élevé, épais et fissuré, mais pas ulcéré. Le patient a

comme symptôme une sécheresse de la bouche qui, ordinairement, demeure asymptomatique jusqu'à ce que l'anormalité soit découverte par le dentiste (Figures 3-4). L'épithélium est épaissi et les cellules de la couche basale sont remplacées par plusieurs couches de petites cellules rondes posées sur une membrane ondulée.

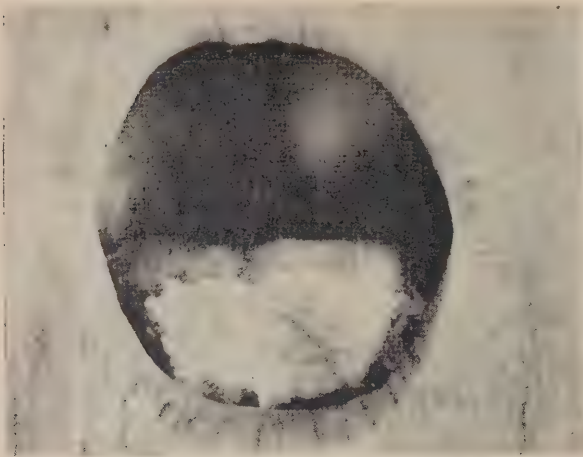
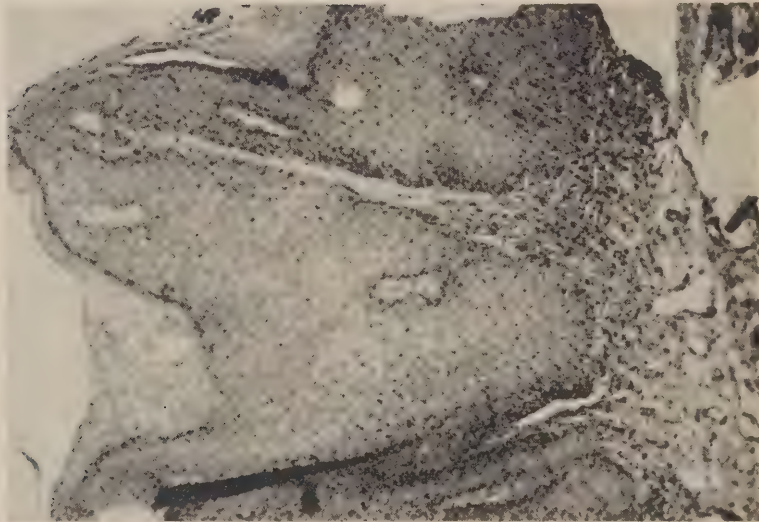


FIGURE 5 Leucoplasie en phase avancée. (D'après MacComb: Postgrad. Med. 27:349, mars (1960).)

FIGURE 6 Photomicrographie de la leucoplasie en phase avancée. (D'après MacComb: Postgrad. Med. 27:349, mars 1960.)



Le troisième genre est élevé, fissuré, avec une croissance papillaire qui borde le cancer squameux: ceci est le précurseur du cancer (Figures 5-6).

Le processus est très lent, mais dès que l'on remarque que la phase ulcérate est atteinte, le traitement n'a pas beaucoup de valeur et c'est alors que la lésion est considérée comme dangereuse. Le processus pathologique s'explique par une tentative des muqueuses de protéger leurs couches les plus profondes et les plus

sensibles d'un irritant en se couvrant d'une couche kératineuse. Et, en même temps, la sous-muqueuse est envahie par de petites cellules rondes qui sont un procédé typique de l'inflammation.²² Les plaques blanches sont des cellules mortes cornifiées par dessus un épithélium irrité et anormalement épaissi.

En examinant une lésion blanche en bouche, il faut faire un questionnaire assez poussé, car la leucoplasie, tel que le mentionne Mac Comb,³² semble se lier à

l'usage du tabac sous toutes ses formes. Le même auteur ajoute que les dents cariées et une mauvaise hygiène buccale souvent vue dans des endroits où la nourriture n'est pas équilibrée et où une avitaminose est marquée, contribuent à la formation de la leucoplasie; à ceci s'ajoute aussi l'alcool qui va de pair avec le tabac.

Le patient souffrant d'avitaminose montrera une atrophie diffuse des papilles de la langue et une inflammation aiguë ou subaiguë avec ulcérations et fissures aux angles de la bouche. La langue peut aussi être profondément fissurée et repliée (langue géographique ou scrotale). Si ces conditions ne sont pas progressives, elles disparaissent en même temps que d'autres manifestations d'une nutrition pauvre, si une diète adéquate de vitamine B est apportée.

Alors, sans aucun doute, l'histoire de cas nous aidera à bien découvrir cette lésion et à poser un diagnostic précoce.

CONCLUSION

Ce bref exposé des lésions précancéreuses et des conditions pouvant être rencontrées dans la bouche ne fait qu'effleurer la multitude des problèmes en cause. Le dentiste doit bien remplir son rôle; c'est son prestige et son devoir. Il doit se familiariser constamment avec les symptômes, les causes, les diagnostics et les pronostics de ces conditions variées.

Ce qu'il faut comprendre surtout, c'est l'immense champ d'action qui s'ouvre à l'habileté du dentiste pour poser un diagnostic. Ce champ est encore plus vaste que les changements vus en bouche et qui s'associent aussi à la condition du reste du canal alimentaire.

Le dentiste peut donc contribuer à apporter un confort et une paix au patient, puisque toutes les lésions buccales ne sont pas cancéreuses. Au moyen d'une percussion marquée, il peut encore éloigner la peur et l'appréhension que possèdent bien des personnes pour le cancer et du fait même réduire, psychologiquement, la cancérophobie en se servant d'une psychothérapie basée sur l'espoir.

Le dentiste de famille possède donc une place de choix afin de promouvoir la santé du public. De ce point de vue, il est un partenaire dans la prévention du cancer. Comme dépisteur des cancers buccaux, le dentiste devient un médecin buccal, un chirurgien et aussi un bienfacteur pour l'humanité.³³

SUMMARY

The author describes the role of the dentist in the diagnosis and prevention of cancer. Early recognition implies a knowledge of both cancerous and precancerous lesions in order to differentiate between the two, as well as familiarity with the various investigative methods for arriving at a proper diagnosis. These include a medical and dental case history, biopsy, inspection, palpation, aspiration, and radiographic and cytological examination.

Precancerous lesions, according to the author, are those lesions which on the basis of careful examination reveal no evidence of malignant degeneration at examination. A certain percentage of these lesions will undergo malignant degeneration. On the other hand there is a greater likelihood of this eventuality in areas where only healthy tissue pre-exists. Accordingly, he classifies carcinogenic conditions on the basis of (1) malignant degeneration in almost any kind of benign tumour of long standing; (2) mechanical and chemical irritation, including certain predisposing dental and oral conditions (e.g. oral hygiene); and (3) a number of psychological changes within the oral mucosa. Examples are drawn from each group, emphasizing in each case the predisposing causes and presenting the findings in all oral lesions which might ultimately undergo malignant degeneration.

The author concludes with an illustrated description of leucoplakia, including the aetiology, signs and symptoms, evolution and pathological changes of this important precancerous lesion.

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1047 Chaumont, Sillery

La fluoration au Canada, 1962

Bureau des recherches économiques de l'A.D.C.

Huit et quatre dixième pour cent de la population du Canada vit dans des localités où on contrôle la teneur de l'eau en fluor. Ce pourcentage représente 1,535,000 personnes habitant dans 87 municipalités, villes ou villages. Vingt-cinq municipalités de plus que l'an dernier fluorurent leur eau de consommation; quatorze de celles-ci sont dans la Saskatchewan, six dans Québec, trois en Ontario

et deux au Yukon et dans les Territoires du nord-ouest.

Trente-sept referendums ont eu lieu durant 1961; seulement quinze de ce nombre ont été favorables à la fluoration; cinq sur seize en Ontario, sept sur treize en Alberta, un sur six en Colombie britannique et un sur un en Saskatchewan et dans les Territoires du nord-ouest.

TABLEAU 1 Municipalités qui fluorurent leur eau, au mois de janvier 1962.

Province	Villes	Début	Population	Population de la province touchée par cette mesure
Terre-Neuve				
Ile-du-Prince-Edouard				
Nouvelle-Ecosse	Dartmouth	1956	45,000	169,500
	Halifax	1956	115,000	
	Kentville	1956	6,500	
	Wolfville	1959	3,000	
Nouveau-Brunswick				
Québec	Acton Vale	1960	4,000	166,400
	Beaconsfield		9,500	
	Berthierville	1960	3,300	
	Candiac		1,100	
	Chomedey		29,300	
	Delson		2,200	
	Dorval	1956	16,600	
	Duvernay	1958	8,000	
	Joliette	1957	18,300	
	Joliette-Sud		1,000	
	Laval-des-Rapides	1958	18,300	
	Notre-Dame-des-Prairies		1,500	
	Pointe-Claire	1955	21,300	
	Pont Viau	1958	15,500	
	Rock Island	1958	1,800	
	Ste-Catherine d'Alexandrie		1,800	
	St-Constant		3,900	
	St-Vincent de Paul	1958	7,800	
	Stanstead Plain		1,200	
Ontario	Brantford	1945	59,900	354,300
	Brockville	1956	16,600	
	Burlington	1961	42,500	
	Deep River	1952	4,800	
	Fort Erie	1952	8,900	
	Oshawa	1953	60,100	
	Port Credit	1961	6,500	
	Sudbury	1952	76,800	
	Thorold	1952	9,500	
	Tisdale	1955	8,700	
	Toronto Township	1961	60,000	
Manitoba	Boissevain	1957	1,200	531,100
	Brandon	1955	28,200	
	Dauphin	1960	7,400	
	Killarney	1960	1,700	
	Minnedosa	1960	2,200	
	Portage la Prairie	1958	12,400	
	Steinbach	1960	3,600	
	Winnipeg	1956	474,400	

TABLEAU 1 (suite)

Province	Villes	Début	Population	Population de la province touchée par cette mesure
Saskatchewan				214,700
	Assiniboia	1953	2,400	
	Blaine Lake	1961	600	
	Cabri	1961	700	
	Canora	1961	2,100	
	Carrot River	1961	900	
	Chaplin	1961	500	
	Davidson	1961	900	
	Estevan	1961	7,700	
	Eston	1957	1,600	
	Kamsack	1959	2,900	
	Kindersley	1959	2,900	
	Leader	1961	1,200	
	Luseland	1961	700	
	Melville	1960	5,200	
	Montmartre	1960	500	
	Moose Jaw	1952	33,200	
	Naicam	1961	700	
	Preeceville	1961	900	
	Prince Albert	1960	24,200	
	Rosthern	1960	1,300	
	Saskatoon	1955	95,500	
	Star City	1961	500	
	Swift Current	1954	12,200	
	Tisdale	1960	2,400	
	Wadena	1961	1,300	
	Watson	1961	900	
	Weyburn	1955	9,100	
	Wynyard	1956	1,700	
Alberta				33,100
	Devon	1959	1,400	
	Fairview	1958	1,500	
	Grande Prairie	1959	8,400	
	Innisfail	1960	2,200	
	Red Deer	1958	19,600	
Colombie britannique				56,300
	Burns Lake	1960	1,000	
	Campbell River	1960	3,500	
	Kelowna	1956	13,200	
	Kitimat	1958	7,900	
	Lake Cowichan	1960	2,100	
	Mesachie Lake	1958	300	
	Prince George	1955	13,900	
	Prince Rupert	1957	12,000	
	Smithers	1955	2,400	
Territoires du nord-ouest				4,900
	Fort Smith	1961	1,700	
	Yellowknife	1959	3,200	
Yukon				5,000
	Whitehorse	1961	5,000	
CANADA	total de la population touchée			1,535,300

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Syndrome of Dual Bite Associated with Open Bite

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The movement of the mandible and the position of the condyle in different phases of functional activity have received considerable study and although there is no unanimity of opinion, the majority of workers appear to favour the view that during movement from the rest position to centric occlusion, a hinge movement occurs within the temporomandibular

joint and there is a barely perceptible change in the position of the condyle relative to the glenoid fossa.^{1,2,3}

Movements of the anterior part of the mandible during chewing have been studied² and the pathways which have been described show variable patterns. From the above it can be assumed that the normal in movement pattern is determined by general practice. Changes in the movement pattern caused by age or other factors may lead to occlusal interference, which, in certain circumstances, can cause pain or discomfort in the region of the temporomandibular joints.

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It is generally understood that as long as a certain type of movement is maintained, the teeth are in normal occlusion, but that when interference occurs, deviations from the accepted occlusal pattern develop.

The most retruded position of the mandible does not necessarily correspond with the position of the mandible assumed during unpremeditated closure, and the latter can be referred to as the acquired position. When the discrepancy between the most retruded occlusal position and the acquired occlusal position passes beyond a certain limit, the term "dual bite" should be applied. In these cases the mandible can follow two different pathways during the procedure of closure and the condyle can also take two different positions in the glenoid fossa. It should perhaps be emphasized that in certain circumstances the mandible can be postured subconsciously into a forward occlusal position, a factor which is of significance in establishing the occlusal plane.

CLINICAL ASPECT

From the clinical point of view, patients exhibiting this condition show the following features:

1. When the mandible is in the rest position there is no variation from the normal.
2. In the acquired posture of occlusion the mandible is positioned forward, the teeth are in contact and there is acceptable interdigitation between the upper and lower dentition.
3. In occlusion, with the mandible in the most retruded position, there is contact between the molar teeth only, and an anterior open bite is present.

This open bite in the incisor and bicuspid region is the key symptom of the syndrome.

When the discrepancy between the acquired occlusal position and the most retruded position reaches a certain limit—approximately three millimetres or more—it becomes significant both from the point of view of the maintenance of occlusion as well as from the pain aspect.

It would appear that pain is less likely to be a feature in juveniles than in adults.

In the course of time there is a tendency for the mobility of the joints to decrease and for the patient to seek an occlusion with the mandible in a more retruded position. Consequently, evidence of this condition often does not appear until middle age, but it can be precipitated by certain types of treatment, such as restorations of occlusal surfaces of the teeth, bite rehabilitation and surgical intervention.

RADIOGRAPHIC APPEARANCE

Radiographs of the temporomandibular joints show no abnormality in the bony outline, and the excursion of movement is within the range of normal. The joint space, however, has a characteristic pattern of appearance:

1. In the rest position it is not significantly different from normal, both in width and consistency of width.
2. In the most retruded position there is no observable deviation from normal.
3. In the position of acquired occlusion the joint space is wider posteriorly and superiorly; that is, the head of the condyle is downwards and forwards in the glenoid fossa.

To illustrate this syndrome six cases are presented.

Case No. 1 — Female, age 17

The profile was slightly convex and there was evidence of earlier mouth breathing

(Figure 1). The teeth were in relatively good condition and the presence of facets on the crowns indicated vigorous chewing. There was a slight tendency towards crowding in the lower jaw. The occlusion was classified as Angle Class I (Figure 2). When the patient relaxed, the mouth opened slightly and the lower jaw dropped back a short distance — the usual pattern with mouth breathers. During closure the teeth were brought directly to the occlusion just described. However, if the mandible was pushed back to its maximum retruded position, occlusal contact could only be established on the most posterior teeth and there was a gap between the upper and lower central incisors of 4 millimetres (Figure 3).

Radiographic examination of the temporomandibular joints showed the following: With the mandible in the rest position, the

placement of the condyle and the joint space were normal (Figure 4a). In the acquired occlusal position (Figure 4c), the condyle was downwards and forwards relative to its placement in rest position. In the most retruded occlusal position, the condyle was again normally placed in the glenoid fossa (Figure 4b).

After occlusal grinding of the most posterior teeth the patient was instructed to use the retruded occlusal position.

A few weeks later it became difficult for the patient to move the mandible forward to the former position of acquired occlusion. The reflex which determined the forward movement of the mandible seemed to disappear gradually. Orthodontic treatment was then instituted in order to establish a satisfactory occlusion with the mandible in the most retruded position.



FIGURE 1 Case No. 1. Profile of the patient.

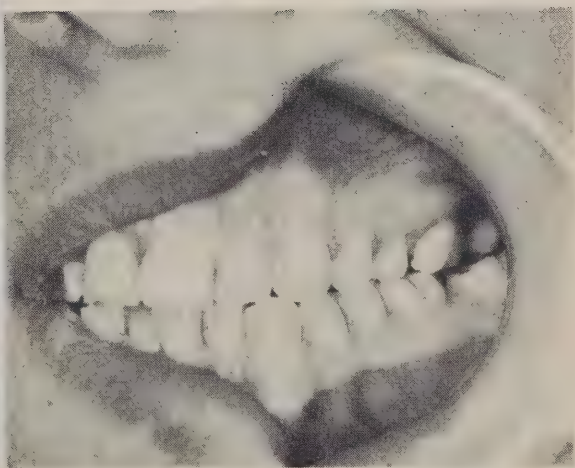


FIGURE 2 Case No. 1. Teeth in acquired occlusion.

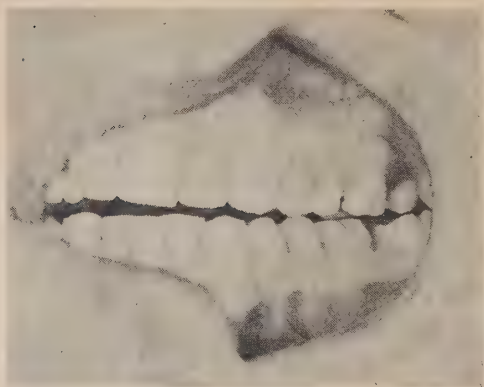


FIGURE 3 Case No. 1. Retruded occlusion showing anterior open bite.

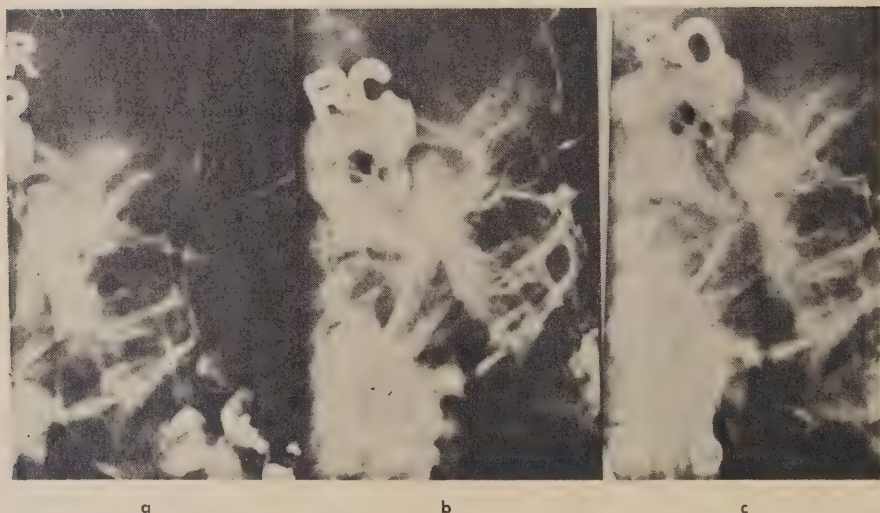


FIGURE 4 Case No. 1. Radiographs of the right temporomandibular joint (a) in rest position, (b) in most retruded occlusion, and (c) in acquired occlusion.

Case No. 2 — Female, age 40

The patient had had both mandibular first molars removed some years previously. There was some slight collapse of the lower arch but in spite of this the occlusion was relatively good apart from an overjet of 4 millimetres.

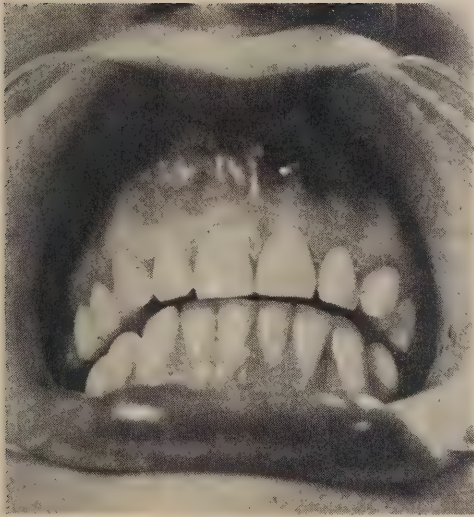
Approximately nine months previously mild pain was experienced in the region of

the temporomandibular joints and treatment in the form of occlusal equilibration was instituted. Record models of the teeth at that time are illustrated (Figure 5). Shortly afterwards the patient became aware of the fact that only the most posterior teeth could be brought into contact and that there was a gap between the upper and lower anterior teeth during closure (Figure 6).

FIGURE 5 Case No. 2. Models showing the teeth in occlusion.



5



6

FIGURE 6 Case No. 2. Clinical photograph showing the anterior open bite.

Radiographically, the joints showed no abnormality and clinically, the mobility of the joints was normal.

Case No. 3 — Female, age 45

Four years previously the patient first felt sharp pain in the region of the right temporomandibular joint. This was of sudden onset and of short duration. A year later there was a sudden experience of the same type of pain but this was accompanied by a marked limitation of opening

of the mouth. This continued for two weeks and was followed by a dull pain which lasted for a further month. At this time a diagnosis of arthritis was suggested but no treatment was instituted. The following year dental treatment including occlusal equilibration was undertaken and shortly after that the patient became aware that the incisor teeth could no longer be brought into contact. Analysis of models of the teeth shows that dental restorations have not caused an open bite (Figure 7). When the patient presented for examination the open bite had caused a separation of 5 millimetres in the incisor region (Figure 8). The general health was good but

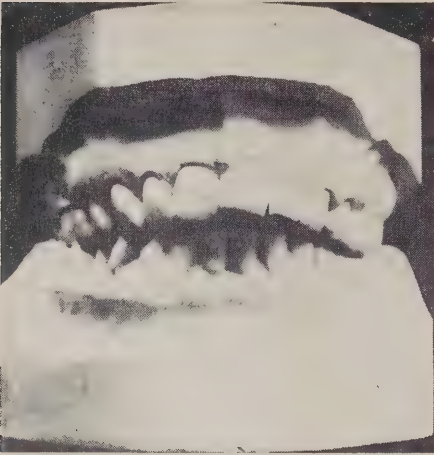


FIGURE 7 Case No. 3. Models showing the teeth in occlusion.

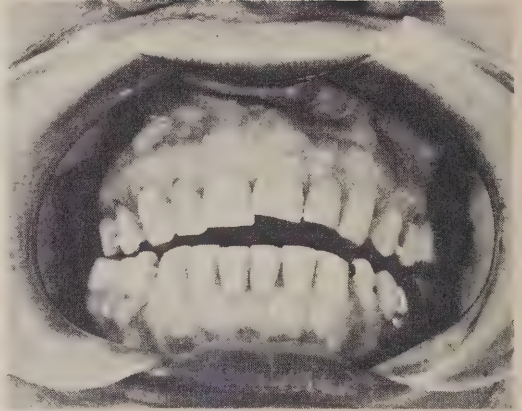


FIGURE 8 Case No. 3. Clinical photograph showing the anterior open bite.

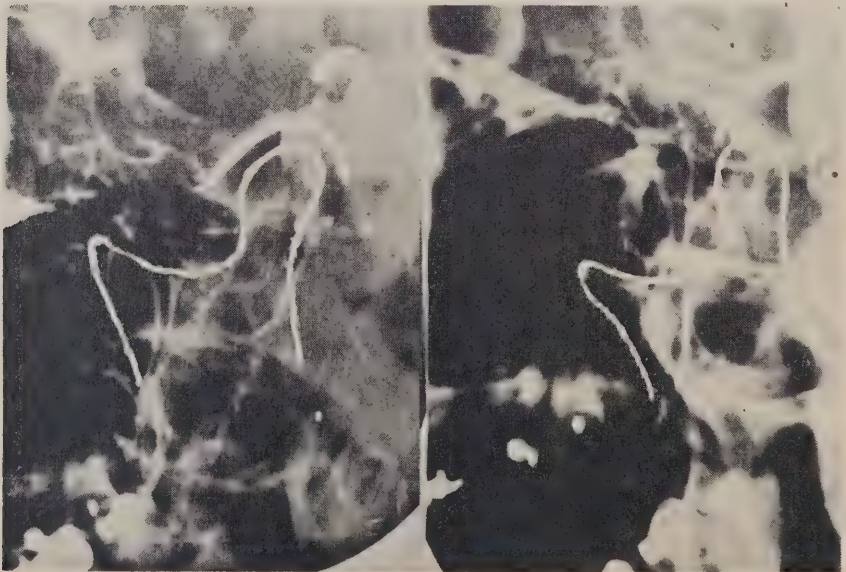


FIGURE 9 Case No. 3. Radiographs of the temporomandibular joint. The illustration on the left shows the joint with the mouth in the position of most retruded occlusion. That on the right shows the joint with the mouth open. The important features have been outlined for greater clarity.

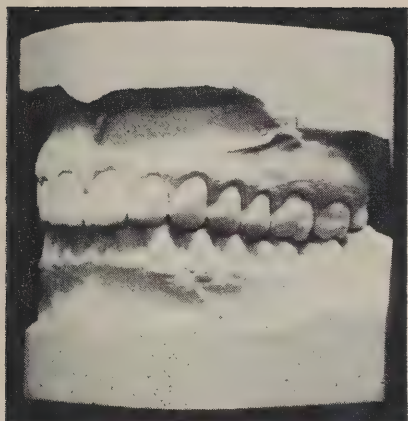


FIGURE 10 Case No. 4. Models showing the teeth in the acquired position of occlusion.

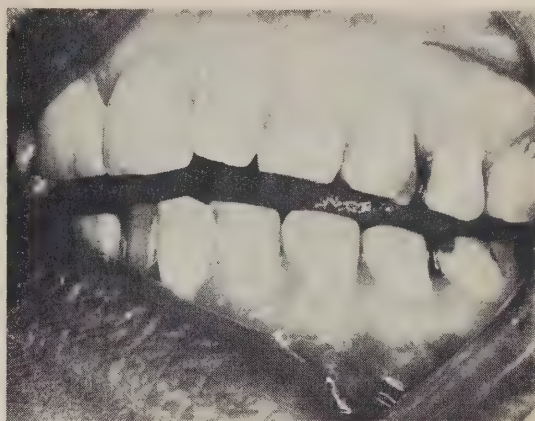


FIGURE 11 Case No. 4. Clinical photograph showing the retruded position and consequent anterior open bite.

the patient was apprehensive as no satisfactory explanation of the nature of her complaint had been given.

Clinical and radiological examination showed that the patient was unable by any procedure to bring the anterior teeth together. There was a slight, probably insignificant, clicking in both joints and there was a suggestion of restricted movement of the joints. Radiographically, there was no evidence of abnormality (Figure 9).

Case No. 4 — Female, age 55

According to the patient's statement there had been no abnormality of occlusion up to six years previously. At that time there had been irritation of the side of the tongue, and occlusal equilibration had been instituted. Models of the teeth from that time (Figure 10) substantiated the statement.

One year later, and again two years subsequently, further grinding for occlusal equilibration was undertaken.

Following this treatment the patient became aware that occlusal contact could only be established between the molar teeth. The irritation of the tongue and the discomfort in the temporomandibular joints continued.

Clinical and radiological examination showed that the mobility of the mandible was normal but occlusal contact could only be established between the molar teeth (Figure 11).

Case No. 5 — Female, age 20

Both mandibular cuspids had been removed because of crowding, but apart from this the dentition was good. Five months previously pain had developed in the region of the left temporomandibular joint and this had been treated by excision of the left condyle. Three months later discomfort occurred in the right joint and condylectomy on the right side was performed. Shortly after this it was observed that the previous occlusion (Figure 12) had changed and an anterior open bite had developed (Figure 13). It may be argued that this condition had occurred as a result of the contraction of scar tissue following the surgical treatment. However, radiological examination suggested that the distance between the amputated condyle neck and the glenoid fossa was normal and if the condyle had been present it would have been in its correct position. Also, in the half open position, by superimposing a tracing of another mandible of similar size, it was shown that the condyle would have been in a normal position in relation to the glenoid fossa (Figure 14). This would indicate that after condylectomy the mandible remained in the rest position. In this case it is reasonable to assume that because of the loss of both attachments of the lateral pterygoid muscles on the neck of the condyle, the mandible could no longer be moved forward to the previously acquired occlusal position.

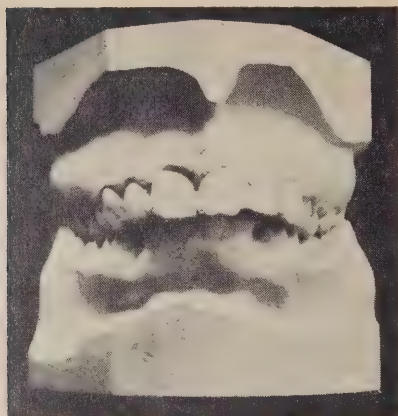


FIGURE 12 Case No. 5. Models showing the original occlusion.

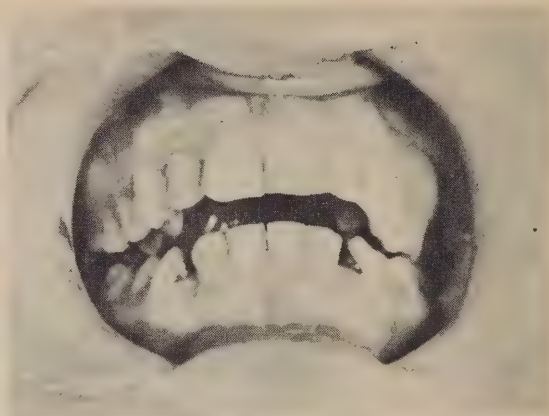


FIGURE 13 Case No. 5. Clinical photograph showing the anterior open bite.

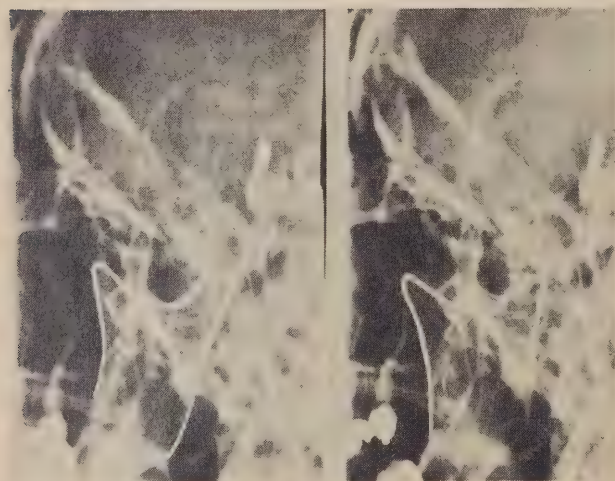


FIGURE 14 Case No. 5. Radiographs of the temporomandibular joint. The illustration on the left shows the joint with the mouth closed. That on the right shows the joint with the mouth in a half-open position. The dotted line indicates the estimated position the condyle would occupy if it were present.

Case No. 6 — Female, age 15

This patient was treated because of a malocclusion classified as Angle Class II, Division 1. A maxillary protrusion and crowding of the mandibular incisors were the primary reasons for the extraction of the four first bicusps. Conventional orthodontic therapy, including the use of inter-

maxillary elastics, was carried out.

After one year of treatment it was observed (Figure 15a) that the occlusion was established with the mandible in a protruded position. When the mandible was pushed back to the most retruded position the occlusion was limited to the molars (Figure 15b). The orthodontic treatment had resulted in a dual bite.

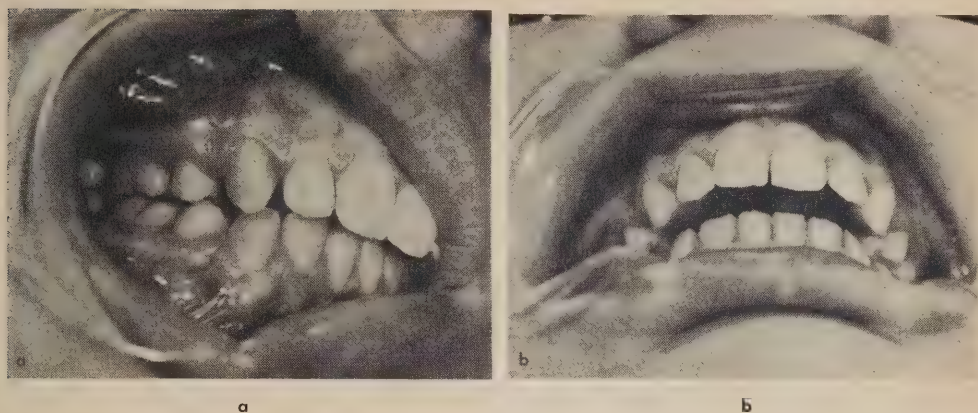


FIGURE 15 Case No. 6. (a) The mandible in the protruded position with the teeth in articulation. (b) The mandible in the retruded position with an anterior open bite.

DISCUSSION

Six cases have been presented in order to demonstrate certain characteristic features found in the syndrome of dual bite associated with open bite.

The first case had an acquired occlusion, established and maintained on the basis of a forward movement of the mandible from rest position to occlusal position.

Occlusal equilibration on the molars was carried out in order to

(a) abolish the accustomed sense of occlusion, and

(b) establish a new sense of occlusion in the molar region with the mandible in the most retruded position.

The patient was instructed to exercise this new hinge movement pattern of the mandible and it soon became inconvenient for the patient to maintain the previous occlusion. This implies that the established sense of occlusion⁴ is a very important factor in the preservation of certain neuromuscular reflexes in the masticatory system.

This also implies that the establishment of the inclination of the line of occlusion,

or occlusal plane, depends on the relation between the jaws at the moment of occlusal contact. A forward movement of the mandible may be associated with an elevated level of occlusion in the incisor region.

Cases 2, 3 and 4 have in common that the acquired occlusion was established and maintained into the forties before the significant neuromuscular reflexes were abandoned. The first symptom recognized was pain in the temporomandibular joints. However, general age changes in the masticatory apparatus, including reduced mobility of the mandible and occlusal wear of the teeth might have been forerunners of the pain. Occlusal correction probably merely brought about a hastening of the process.

In case 5 operative procedures had brought a sudden end to the forward movement of the mandible.

Case 6 demonstrates that when the mandible is held forward mechanically with the teeth in occlusion for long periods, a forward movement from rest to occlusal position may be adopted by the patient, and the occlusion may become an acquired occlusion.

The treatment of these cases varies according to the severity of the abnormal-

ity and the presence or absence of pain. When tension and pain are present in the joint immediate relief can be achieved by the insertion of a splint or onlay on the maxillary teeth anterior to the point of initial contact. This appliance should establish occlusal contact over a larger area of the dental arch without increasing the vertical dimension. The above, however, should be considered as an emergency measure only, and for permanent results it is necessary to institute other procedures. In severe cases orthodontic treatment is required; this consists of extrusion or elongation of the teeth anterior to the first contact spots. In instances of less severity occlusal equilibration will produce an acceptable result.

SUMMARY

A syndrome has been described in which the main feature is a dual bite. Six cases showing this condition have been discussed. Suggestions have been made for a possible explanation of this abnormality.

RÉSUMÉ

Les auteurs décrivent un ensemble de symptômes dont l'essentiel est une "occlusion double." La position la plus reculée de la mandibule ne correspond pas nécessairement avec la position qu'elle prend dans la fermeture spontanée; on peut appeler celle-ci la position acquise. Il est question d'occlusion double quand la différence entre la position la plus reculée

de la mandibule et la position acquise dépasse certaines limites.

Cet article expose six cas présentant cette anomalie. Leur traitement dépend du degré d'anomalie et de la présence ou l'absence de douleur. On peut, dans les cas de tension et de douleur dans l'articulation mandibulaire, apporter un soulagement rapide, en insérant au point de contact occlusal un support ou un bloc articulaire sur les dents antérieures du maxillaire supérieur. Cet appareil doit établir un contact occlusal sur une grande surface de l'arcade dentaire sans augmenter la dimension verticale. Ce traitement n'est qu'une mesure d'urgence et, pour obtenir des résultats permanents, il faut avoir recours à d'autres procédés. Des traitements d'orthodontie s'imposent dans les cas graves; ces traitements consistent dans l'extrusion ou l'élongation des dents antérieures à l'endroit du premier contact. Une équilibration de l'occlusion produira des résultats satisfaisants dans les cas moins graves.

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Pilot Study on the Advanced Training and Employment of Auxiliary Dental Personnel in the Royal Canadian Dental Corps: Preliminary Report

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The Royal Canadian Dental Corps has been investigating, as a part of its overall program to attain the highest possible standard of dental health in the Canadian Forces, the possibility of wider and more effective employment of auxiliary personnel. The investigation so far has concerned itself primarily with the advanced training and employment of clinical technicians who at present are the counterpart in the Services of the civilian dental hygienist. In the near future the project is to be extended to the field of motion and time study and to embrace all other members of the dental health team including laboratory technicians, dental assistants and clerks.

The present basic clinical technicians have been trained and employed in the Corps since 1956 and their establishment has been increased gradually to the existing 22 positions. Authority now is being sought to increase their numbers to over fifty with the aim of providing this service on the basis of one technician to approximately 2,000 Service personnel. The availability of this greater number is not foreseen in the immediate future since the selection of candidates for this course is dependent on many prerequisites of which an important one is experience and background as an above-average dental assistant. Furthermore, the complete qualification is conducted at two levels and

the process rapidly separates those who for one reason or another would not develop into the type of technician we are seeking for this particular employment. The first level consists of a 24-week course and the second a four-week course. Intervening between the two courses is a minimum period of 30 months on-the-job training and experience. In the first level of training out of a total of twenty-six candidates who have attended the course only 19 have qualified and in the higher level, 16 have attempted and 13 have qualified.

Basic clinical technicians as they are now employed in the Corps are concerned almost entirely with the preventive side of our service for it is this field wherein lies the most promising hope of eventually raising our standard of dental health. In this capacity their contribution has been remarkable. Table 1 outlines the average productivity of clinical technicians in the Royal Canadian Dental Corps for the five-year period from 1957 to 1961.

The progression in productivity of technicians over the five-year period followed as a natural sequel of their experience and improved skills, but the increase has exceeded anything that was expected originally. The two most senior clinical technicians averaged in 1961 treatment to a value in excess of \$11,000 for the year. These figures do not include, of course, the worth of the auxiliaries in dental health education and in such preventive measures as fluoride applications and dental health checks.

The importance of dental health education and preventive dentistry in the

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TABLE 1 Average productivity of clinical technicians in the Royal Canadian Dental Corps from 1957 to 1961.

Year	No. of clinical technicians employed	Prophylaxis per technician per year	Radiographs per technician per year	Value of treatment per technician per year*
1957	4	255	709	\$2,690
1958	7	696	1,989	7,460
1959	14	726	1,786	7,202
1960	17	905	1,945	8,410
1961	20	990	1,949	8,849

*The value is based on the schedule of fees of the Department of Veterans Affairs.

Forces is fully recognized but the growing backlog of restorative treatment nevertheless remains a problem of major concern. As in civilian life, there has been a continual shortage of dental officers and it has not been possible to keep up with the increasing demand for treatment. It is true that our auxiliary personnel have been of great assistance in coping with the demand but they cannot be expected to reduce the pressing requirement for dental officers whose skills they can only augment. It was felt, however, that possibly the responsibilities of the auxiliaries could be extended to include procedures which would not only be beneficial in the preventive program but would contribute to the restorative program as well. In this way the dental officer would be relieved of certain of the more routine operations and would be free to devote more of his time to a side of the service which actually required his level of training, judgement and experience. Such time-consuming procedures would be delegated to an auxiliary with a lesser training but with a high level of technical skill along certain well-defined lines. It would be the first step toward establishing the validity of the concept of the dental health team in utilizing more fully the professional skills of the dentist.

Accordingly it was felt that the Royal Canadian Dental Corps, with its organization, control and training facilities was in

a favourable position to establish a pilot study to investigate the advanced training and employment of auxiliary personnel. Initially this study would be confined to the clinical technician but later it would be broadened to include dental assistants and other auxiliaries who form a part of the dental health team. It would be carried out in accordance with the recommendations made by the Canadian Dental Association in its policy statements and with the encouragement of the Association's Council on Education. The overall aim of this first study would be to establish whether our clinical technicians could be trained economically to undertake the additional responsibilities and then employed effectively in our present clinical organization. For the purposes of this paper, these auxiliaries so trained are designated as Advanced Clinical Technicians to differentiate from our existing Basic Clinical Technicians.

STUDY PLAN

It was decided that, if valid conclusions were to be reached regarding the advanced employment of clinical technicians, the study should be carried out in the following six stages:

Stage 1.—To adjudge the advanced procedures and responsibilities which should be delegated and in which the technician

might be trained to a suitable standard in a reasonable period of time.

Stage 2.—To train a selected clinical technician to the required level on an informal basis in order to evaluate the probable syllabus requirement. The candidate selected to be the most outstanding clinical technician available.

Stage 3.—To determine if the technician so trained could be employed on a practical basis under conditions existing in the average Royal Canadian Dental Corps clinic.

Stage 4.—To train additional clinical technicians during a formal course in order to establish a standard syllabus. The candidates selected to be average technicians with experience at the higher level.

Stage 5.—To determine how best these technicians could be integrated into the dental health team and their value in such employment.

Stage 6.—Evaluation of the study and determination of policy regarding future training and employment of auxiliary personnel.

The study was initiated in June 1960 and has now progressed to Stage 4 which was planned for commencement in September of this year. Completion of Stage 6 is anticipated by April 1963. There follows a summary of the results of each of the completed stages and a brief outline of the expectations for the remainder.

Stage 1. Delegation of Technical Procedures.—In considering the procedures which could be delegated to the advanced clinical technician it was recognized that certain principles must be upheld. The concept of the Canadian Dental Association as outlined in its policy statements in this regard provides an excellent yardstick by which each procedure can be judged and indicates clearly the lines of demarcation that exist at the

different levels of training and qualification. There are definite boundaries beyond which the training of auxiliaries in such a program cannot and should not extend. For example, diagnosis and treatment planning are high professional achievements which require the training, knowledge and experience of a dentist. Similarly the removal or cutting of or injection of agents into human tissue as well as the actual responsibility for any treatment must remain the prerogative of the registered practitioner. Further, it was considered that the advanced procedures which could be delegated must be based on a purely mechanical approach to standard techniques which would be acceptable to the majority of patients. Unusual conditions demanding a different or more advanced technique would be the responsibility of the dental officer.

It was felt that the field of operative dentistry offered the greatest potential for delegation because a large proportion of dental officer time is spent in this field. However, it was also considered that the clinical technician could be trained to perform certain simple standard procedures in prosthodontics and periodontics. Generally speaking, in operative dentistry, the dental officer would restrict himself to the preparation of the cavity and the preservation and protection of the pulp, and the clinical technician to the actual insertion and completion of the restoration. In prosthodontics the training would be extended to include certain impression techniques and simple bite relations. Instruction in periodontics would be concerned with periodontal packs and home care instructions. All of these procedures would, of course, be subject to inspection by a dental officer. A detailed list of the procedures which were finally selected is contained in Table 2.

Stage 2. Selection and Training of Candidate.—The candidate chosen for the advanced training was one whose past experience, training, digital skill and high learning ability would permit him to

TABLE 2 Advanced procedures delegated to a clinical technician.

Clinical field	Delegated procedures
Operative dentistry	Application of the rubber dam. Selecting, contouring, placing and removal of matrix bands. Packing, carving and finishing amalgam restorations. Placing and finishing silicate and acrylic restorations. Placing, carving and finishing various types of temporary cements.
Partial denture prosthodontics	Impressions for study casts. Final impressions. Simple interocclusal records. Tooth shade selection.
Complete denture prosthodontics	Preliminary impressions Preliminary bite relations (carving and fitting of bite blocks prior to interocclusal registration by the dental officer).
Periodontics*	Periodontal packs. Home care instructions.

*These procedures are in addition to prophylaxis and scaling for which the basic clinical technician was previously trained.

absorb the training in a minimum length of time. He had spent thirteen years as a dental assistant, two years as an instructor to militia units and two and a half years as a basic clinical technician. During this time he received four weeks' formal training as a dental assistant and 28 weeks' training as a basic clinical technician or the equivalent of one academic year at a university. The clinical technician training included anatomy, dental anatomy, histology, embryology, bacteriology, physiology, first aid, pharmacology, dental pathology, dental radiology, oral hygiene, patient management and clinical practice.

It had been planned to conduct the training over an uninterrupted period of time, but due to unavoidable incidents and demands on both the instructors and the candidate this was found to be impossible. However, a strict accounting of the time involved was kept and it was found that the instruction time required was 11 hours of theory and 53 hours of

demonstrations and exercises in operative dentistry and 13 hours of theory and 55 hours of demonstrations for prosthodontics and periodontics. The application of these procedures to patients required 5 hours of theory and 25 hours of practice under detailed and close supervision. In summary, the total training period for this candidate was just slightly over four weeks.

Stage 3. Clinical Employment. — The specific aim of Stage 3 or the clinical employment portion of the study was to determine the practicability of and to test methods for the clinical employment of the advanced clinical technician. The dental clinic at R.C.A.F. Station Uplands near Ottawa was chosen as the location for the study because it was considered typical of the type of clinic where these tradesmen would be employed and had the added advantage of being near to the Directorate of Dental Services. The study

staff included: a study director and assistant study director from the Directorate staff; two dental officers from R.C.A.F. Station Uplands; the tradesman under study; two dental assistants and a non-commissioned officer to act as recorder for the work analysis.

Three treatment rooms in the clinic were used, of which two were completely equipped for any type of dental care; the third contained the x-ray equipment and sufficient other dental equipment to perform prophylaxis and take impressions. This arrangement was considered necessary in order to maintain a steady flow of patients and permit full employment of the new tradesman.

Only one dental officer at a time was used in the study since it was considered in planning that one dental officer could keep one advanced clinical technician occupied. As this proved to be true no attempt was made to have two dental officers supply work for the tradesman. Two dental assistants were provided for the dental officer-clinical technician team. One of these was assigned duties as the dental officer's "personal or chairside assistant" and was instructed to be beside the chair whenever the dental officer was operating. The other assistant was designated as a "roving assistant." His duties were to assist the clinical technician as required, seat and dismiss patients, clean up and sterilize instruments after appointments, set out instruments for the next operation and perform other tasks which were presented.

In order to properly assess the new tradesman's value in a dental clinic it was necessary to ensure an adequate flow of patients. Prior to commencing this stage of the study a dental survey was carried out on 150 service personnel and of these, fifty were selected for use in the study. Detailed examinations, including radiographs, were performed for the patients selected and treatment plans developed.

Work analyses of the dental officer and the clinical technician were carried out during the entire period of this stage of the study and consisted of work sam-

pling¹ at the rate of eight observations per hour. The study was in progress for 6½ hours per day for 13½ working days.

In planning the employment of the clinical technician it was felt that his major contribution would be in the field of operative dentistry. The dental officer would prepare the cavity and place the cement base, at which point the clinical technician would take over and complete the restoration. However, it was also considered that at least two periods per day would occur when the clinical technician would have to wait for restorative work to be prepared by the dental officer, and these would occur at the beginning of each morning and immediately after lunch. It was, therefore, necessary to provide tasks that could be proceeded with independently during these periods. His previous training as a basic clinical technician was most valuable here, in that he could perform prophylaxes or preventive treatments, take radiographs or provide chairside education. In addition, he could utilize his advanced training to take impressions or perform periodontal treatments previously referred by the dental officer. In actual practice, it was found that more than two periods per day were required for this purpose and the work analysis showed that such operations accounted for approximately one third of the clinical technician's operating time.

The actual appointments were controlled by the assistant study director. The procedure was to appoint and seat patients fifteen minutes before the scheduled operation time so that they could be prepared and anaesthetized. During the first week a detailed time-table was used which contained seating times, operation times, and locations of the patient, dental officer and clinical technician. During the second week simple appointment sheets were used, one for the dental officer and one for the clinical technician daily, showing times and locations. In the final week it was possible to use a single appointment sheet for both the dental officer and clinical technician

TABLE 3 Evaluation of clinical employment. Dental operations performed during the study.

Operation	Number	Per cent of total	Number involving clinical technician	Per cent involving clinical technician
Prophylaxes	36	10.9	36	100.0
Radiographs	58	17.4	58	100.0
Extractions	1	0.3	—	—
Restorations	229	68.9	151	65.9
Multiple amalgam (class 2)	91	27.4	56	61.5
Single amalgam (class 1 and 5)	101	30.4	64	63.4
Synthetic	34	10.2	28	82.4
Temporary cement	3	0.9	3	100.0
Periodontal treatments	1	0.3	—	—
Bridges	1	0.3	—	—
Impressions	1	1.8	6	100.0
Total	332	99.9	251	75.6

with no reference to locations. The dental assistants had become sufficiently familiar with the routine by this time to locate patients without direction.

FINDINGS

The detailed findings of this stage of the study are presented in tabular form. In summary, they are as follows:

TABLE 4 Evaluation of clinical employment. Equivalent dental officer hours performed by the clinical technician.

Operation	Number	Equivalent dental officer time per operation in minutes*	Equivalent dental officer hours
Prophylaxis	36	30	18.0
Radiographs	58	3	2.9
Multiple amalgam restorations	56	15	14.0
Single amalgam restorations	64	10	10.7
Synthetic restorations	28	12	5.6
Temporary cement restorations	3	10	.5
Impressions	6	10	1.0
Total	251	—	52.7

$$\text{Equivalent dental officer hours per duty day} = \frac{52.7}{13.5} = 3.9 \text{ hours}$$

*Time it would require for a dental officer to perform that operation or portion of the operation performed by the clinical technician.

TABLE 5 Evaluation of clinical employment. Comparison of the time points value of dental services performed before and during the study.*

Time points per duty day during study	131.6
Time points per duty day, 14 days prior to study	67.2
Time points per duty day, previous quarter	69.0
Per cent increase over previous 14 days	95.8
Per cent increase over previous quarter	90.7

*Probably a more accurate evaluation or comparison of productivity before and during the study can be obtained by comparing the time points value of dental services performed. Time points are weighted values based on the average times required to complete the various dental operations and are used by the Royal Canadian Dental Corps to assess dental officer productivity. The increase in productivity during the study period using these values was 95.8 per cent over the previous 14 days and 90.7 per cent over the previous quarter. In actual fact the increase in productivity may be greater than shown since a normal 7½-hour day was worked during the periods prior to the study compared to 6½ hours during the study.

(a) A total of 332 dental operations were performed. The clinical technician participated in 251 or 75 per cent of these (Table 3).

(b) The clinical technician performed dental treatment equivalent to nearly four dental officer hours per 6½-hour working day, which means in effect that the dental officer-clinical technician team achieved 10½ dental officer hours in a 6½-hour day, an increase of 61.5 per cent (Table 4).

(c) The increase in productivity during the study period when evaluated by time points per duty day was 90.7 per cent over the previous quarter and 95.8 per cent over the 14 duty days immediately prior to the study (Table 5).

(d) The work analysis carried out on the dental officers indicated that the percentage of total time spent operating increased from 49.8 per cent prior to the study to 75.0 per cent during the study (Table 6).

TABLE 6 Evaluation of clinical employment. Work analysis of dental officers.

Activity	Prior to study	During study
Per cent of total time operating	49.8	75.0
Per cent of total time non-productive	50.2	25.0
Per cent of total time idle	11.3	6.6
Per cent of operating time spent in personal treatment room	93.6	62.3
Per cent of operating time spent in auxiliary treatment room	6.4	37.7
Per cent of operating time spent in operative dentistry	60.1	89.0
Per cent of time spent in treatment room seating or excusing patients	8.5	1.2
Total observations	655	708

This table shows the most significant findings of the work analysis of the dental officers participating in the study. Probably the most important finding was that the percentage of total time spent operating increased from 49.8 to 75.0 per cent. This increase was probably only partly due to the clinical technician. It also reflected the part played by the dental assistants, patient control and fully equipped auxiliary treatment room. It is interesting to note the reduction in percentage of time spent by dental officers in seating or excusing patients which resulted from the use of the roving assistant and early appointment of patients.

TABLE 7 Evaluation of clinical employment. Work analysis of the clinical technician.

Activity	Proportion of time %
Per cent of total time operating	75.5
Per cent of total time non-productive	24.5
Per cent of total time idle	18.5
Per cent of operating time: prophylaxis	28.5
Per cent of operating time: x-ray	2.8
Per cent of operating time: operative dentistry	67.0
Per cent of operating time: rubber dam	13.6
Per cent of operating time: matrix bands	10.9
Per cent of operating time: packing amalgam or silicate	18.3
Per cent of operating time: carving and finishing	23.8
Per cent of operating time: prosthodontics	1.1
Total observations	702

The purpose of the work analysis performed on the clinical technician shown above was to determine the proportion of time he was operating and the proportion of time spent on the various operations he was trained to perform. The findings shown are self-explanatory.

(e) The most significant finding of the work analysis performed on the clinical technician was that he spent 75.5 per cent of his total time operating which indicates a high level of employment. Operative dentistry accounted for 67.0 per cent of his operating time and prophylaxis 28.5 per cent. Further details are shown in Table 7.

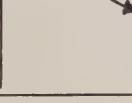
(f) During this stage of the study a pattern of integrated practice evolved. It was found that the schedule shown in Table 8 was the most workable and provided both the dental officer and clinical technician with an interesting variety of work.

Stage 4. Training Additional Clinical Technicians.—The results of the experimental training conducted in Stage 2 and the employment experience of Stage 3 appeared to indicate that training clinical technicians in advanced procedures could be successfully accomplished in a reasonable period of time and that these tradesmen, once trained, could be integrated into dental practice without any great difficulty.

The 4-week period of experimental training was considered phenomenally short, but this could largely be attributed to the fact that it was all given by individual instruction to an outstanding candidate with a wide range of dental experience. It did provide, nevertheless, a basis on which to estimate the amount of time required to present a formal course which would serve as a prototype for future courses for larger classes. It is intended, therefore, to conduct a 14-week course, commencing in the fall of 1962 for candidates selected from the present basic clinical technician trade. Table 9 shows the amount of time which will be allotted to the various subjects. Following this 14-week period of formal training a further two weeks are planned for the purpose of integrating the candidates into practice with dental officers.

Stage 5. Integration with the Dental Health Team.—The marked increase in productivity which was observed in the employment stage of the study cannot be attributed entirely to the new method of employment of the advanced clinical technician. Such things as improved pa-

TABLE 8 Typical daily schedule of integrated operations.

Time	Dental officer	Work flow	Time	Advanced clinical technician
8.00 8.15	Sick parade		8.00 8.15 8.30 8.45	Miscellaneous appointment Prophylaxes, radiographs, impressions, periodon- tal treatment, preventive treatment, or health educa- tion
8.30 8.45	Appointment — preparation for clinical technician		9.00 9.15 9.30	Patient from dental officer
9.00 9.15 9.30	General appointment — dental officer completes		9.45	Coffee break
9.45	Coffee break		10.00 10.15	Miscellaneous appointment
10.00 10.15	Appointment — preparation for clinical technician		10.30 10.45 11.00	Patient from dental officer
10.30 10.45	Appointment — preparation for clinical technician		11.15 11.30 11.45	Patient from dental officer
11.00 11.15 11.30 11.45	General appointment — dental officer completes			

1.00 1.15	Appointment — preparation for clinical technician		1.00 1.15 1.30	Miscellaneous appointment
1.30 1.45 2.00	General appointment — dental officer completes		1.45 2.00 2.15	Patient from dental officer
2.15 2.30	Appointment — preparation for clinical technician		2.30	Coffee break
2.45	Coffee break		2.45 3.00 3.15	Patient from dental officer
3.00 3.15	Appointment — preparation for clinical technician		3.30 3.45 4.00	Patient from dental officer
3.30 3.45 4.00	General appointment — dental officer completes		4.15 4.30	Miscellaneous appointment
4.15 4.30	Clinic administration			

TABLE 9 Advanced clinical technician course.

Subject	Periods
Restorative Dentistry	
Lectures	27
Laboratory exercises and demonstrations	110
Practical clinical procedures	155
Total	292
Periodontics	
Lectures	8
Laboratory exercises and demonstrations	10
Practical clinical procedures	30
Total	48
Prosthodontics	
Lectures	12
Laboratory exercises and demonstrations	24
Practical clinical procedures	88
Total	124
Public Health Dentistry*	
Lectures	12
Laboratory exercises and demonstrations	8
Practical	8
Total	28
Grand total	492

*Public Health Dentistry, which was not previously mentioned as a separate subject, has recently been introduced. This will include instruction in conducting and analysing dental surveys, preventive dentistry and the organization of dental health education programs at units.

tient control methods and specialized dental assisting also played a part. It is, therefore, planned when the additional clinical technicians have completed their advanced training to undertake an investigation to support the findings at R.C.A.F. Station Uplands and, more important, to determine the individual contribution this tradesman can make to the dental team in relation to that of its other members.

This investigation will form one phase of another study which is planned in order to examine the dental team concept as it applies to dental practice in the

Royal Canadian Dental Corps, and to determine the training, dental equipment and dental accommodation necessary for the effective employment of the team. This will be a progressive study with a single variable added in each phase.

The first phase will establish a base line through productivity records and work analysis of the existing personnel and facilities at the dental clinic selected for study. In the second phase the existing facilities will remain but the staff will be increased to consist of two dental officers and four dental assistants. No special training in teamwork, dental

assisting or clinic management will be given. Productivity records will be maintained and work analysis carried out as in phase 1.

The third phase will begin with a training period during which the dental assistants will receive instruction as "chair-side," "roving" or "clerical assistants"² and along with their dental officers will learn teamwork, patient control and the maximum use of auxiliary treatment rooms. Following the training period, clinic operations will be resumed and productivity and work analysis records will be obtained as in the previous phases. Also during phase 3 a memomotion³ study will be carried out in preparation for phase 4. This is a motion study technique which involves the use of a motion picture camera taking pictures at the rate of one frame per second instead of the normal sixteen. This permits the study of one hour's work in 4 minutes.

Before the commencement of phase 4 the memomotion films will be evaluated to help determine equipment and accommodation requirements and the changes necessary in location of equipment in order to increase the efficiency of clinic operations. During phase 4 productivity records will be maintained, work analysis conducted and memomotion films taken as in the preceding phase.

In phase 5 a basic clinical technician will be added to the team and similar productivity and work analysis carried out. Phase 6 will see the introduction of the advanced clinical technician and, following a short familiarization period, the effect of his addition will be evaluated. In the final phase (phase 7) a laboratory technician will be added to the team and his contribution assessed.

At the end of this study the team will consist of two dental officers, an advanced clinical technician, a basic clinical technician, a laboratory technician and four dental assistants using a systematic method for patient control and working in a dental clinic which has been equipped and arranged according to the principles and findings of motion and time study.

CONCLUSIONS

1. Clinical technicians can be trained in a reasonable time to perform certain advanced procedures and integrated into the dental health team with a significant increase in the productivity of the clinic.

2. The value of the concept of the dental health team was clearly demonstrated. All auxiliary personnel were made aware of the real contribution they were making to the health of the individual patients and to the success of the study.

3. The duties of the advanced clinical technician must include procedures in fields other than operative dentistry in order to provide full employment.

4. Treatment planning becomes an even more important subject than heretofore if optimum integration of the dental officer and auxiliary personnel is to be achieved.

5. Dental accommodation may become a problem with the introduction of the advanced clinical technician. A minimum of three treatment rooms is essential for one dental officer and one clinical technician. Two of the rooms must be equipped for all types of treatment and the third for periodontics, radiography, preventive and prosthetic dentistry.

6. Patient acceptance of the advanced clinical technician was excellent.

7. A comprehensive dental service provided through this concept of practice did not demand more in the way of physical effort from any member of the team. Although the amount of treatment was significantly increased there was no noticeable increase in fatigue of the dental personnel. This had been a consideration of some concern prior to the study.

RÉSUMÉ

On nous signale les conclusions préliminaires d'une étude-témoin faite par le Corps dentaire royal canadien sur la formation spécialisée et l'emploi du personnel dentaire auxiliaire. Au moment où nous écrivons ces lignes, un technicien de clinique spécialisé avait reçu la préparation nécessaire pour exécuter certains travaux dentaires qui sont ordinairement réservés au dentiste. De plus, on a procédé à l'analyse de son emploi dans les conditions de travail réelles qui existent dans une clinique, et l'on a établi un programme en vue de former d'autres techniciens de clinique spécialisés en leur faisant suivre un cours organisé à l'Ecole du Corps dentaire.

Les conclusions auxquelles on en est venu jusqu'ici indiquent qu'il est possible de former un spécialiste de ce genre dans un délai raisonnable et d'intercaler ensuite ses services dans l'exercice de la profes-

sion dentaire avec une augmentation de rendement appréciable. L'étude en question a clairement démontré la valeur du principe du travail d'équipe en hygiène dentaire, et l'on a constaté qu'un service dentaire complet qui s'inspire de ce principe n'exige pas un plus grand effort physique de la part de chaque membre de l'équipe. L'acceptation du technicien de clinique spécialisé par le "patient" s'est révélée excellente.

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Department of National Defence

Intravenous Sedation in Dentistry

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Sedation when properly utilized can render a valuable service in preparing the hypersensitive and/or apprehensive patient for dental treatment. The strain of lengthy operative or surgical procedures may be lessened by the judicious use of the barbiturates. Syncope is seen

frequently in the busy practice. True hysteria and micturition have also occurred. The occasional patient vomits, while many complain of faintness and nausea. From the practitioner's viewpoint the hyperactive apprehensive patient producing copious amounts of saliva or the patient who becomes nauseated, faint or even completely unmanageable in a given dental procedure is conducive to neither the best efforts of the clinician nor the best results.

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The technique described does not necessarily reflect Royal Canadian Dental Corps opinion or policy.

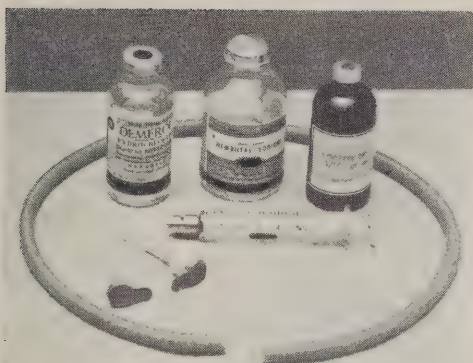


FIGURE 1

To combat this problem oral sedation has been advocated, but the time factor as well as the difficulty of accurately predicting the effective dosage have of necessity restricted oral medication in capsule or elixir form to children. The following intravenous technique (Figure 1) which has been used by Antoni and Van de Mark¹ for more than nine years with no untoward reactions, is being used at the Canadian Forces Hospital, Kingston, with good results. Its safety and effectiveness warrant wider use by the profession.

Sodium pentobarbital (*Nembutal*) is the basic drug used in doses ranging from 100-150 mg. with the latter being the average dose for the weight range 140-200 pounds. When an antisialagogue is indicated gr. 1/150 of atropine is combined with the basic injection. If the desired level of preoperative sedation is not reached after this injection a further 25-50 mg. of meperidine hydrochloride (*Demerol*) is added by keeping the vein open and changing the syringes. After the surgical or operative procedure is completed the patient is taken to the recovery room and sent home in one half to three quarters of an hour. He is cautioned not to drive a car for at least eight hours. If meperidine is used the patient is accom-

panied to his unit. The effect is more profound but the patient is fully mobile within the hour. Burch² used pentobarbital alone in 75 cases in the same weight-dosage range but found that the patients had to be kept in the clinic for one to three hours until able to walk back to their training areas in full control of their faculties. This has not been our experience. Without meperidine additive one half to three quarters of an hour is all the time required in the recovery room. With meperidine the patient is sent to the barracks and to bed but is in good control of his actions after an hour.

The amount of premedication to be used must be based on the individual requirements. Age, sex, height, weight, medical history, degree of apprehension, physical status, habits and the anticipated length and difficulty of the proposed procedure are pertinent considerations. The only contra-indications to parenteral pentobarbital administration are respiratory or cardiovascular depression and severe liver disease. Relative contra-indications, and these are a matter of degree, include the patient with a high fever, diabetes mellitus and anaemia. Fortunately the majority of these conditions are not seen in Service practice. Geriatric patients do not tolerate barbiturates well and should be managed with discretion.

A brief review of the pharmacology of these drugs confirms their suitability for use in dental offices on an outpatient basis. Sodium pentobarbital is a sedative, hypnotic and anticonvulsant with a short duration of action.³ Though not truly an analgesic, it enhances analgesia by sedation and by raising the pain threshold it facilitates the placing of the local anaesthetic. It ameliorates the excitement which so often follows a local anaesthetic injection. Its action is not well understood. Barbituric acid derivatives are thought to produce their effect on the brain cells by retarding the glucose oxidation through inhibition of the dehydrogenases.⁴ The most pronounced effect is on the cerebral cortex, the subcortical areas and the hy-

pothalamic sleep centres. Smooth muscle suffers a temporary loss of tonus. Normal doses do not appreciably affect respiration. They can cause idiosyncrasies such as crying, excitement and restlessness. In hypnotic doses there is no effect on the circulation other than found in normal sleep. The onset of action of pentobarbital administered intravenously is rapid but its full effect cannot be adequately gauged in less than one minute. The gag reflex is not obtunded.

The excessive flow of saliva during dental operations is due to a nervous reflex resulting from manipulation in the oral cavity. The value of an antisialagogue in surgery is apparent. Clinical doses of atropine have little or no cardiac effect and respiration is only slightly stimulated. Slight tachycardia and blurring or dimness of vision may be experienced. Atropine is used to decrease the flow of saliva by inhibiting parasympathetic stimulation or by stimulating the sympathetic inhibition. Atropine inhibits the excitation of acetylcholine on the chemoreceptor substance of the secretory cells. It stops secretion of all glands innervated by cholinergic fibres.

Meperidine hydrochloride has an analgesic, antispasmodic and a definite but slight sedative action. It possesses analgesic properties midway between morphine and codeine. It produces analgesia against mild pain for two to four hours but is not effective in severe pain. Euphoria is sometimes noted. It has a distinct spasmolytic action on smooth muscles of the bronchi. Its action is similar to parasympathetic depression resembling that of atropine and it has a tendency to dilate the eye pupils and to diminish the flow of saliva. The blood pressure, cardiac function and respiration are not appreciably affected in therapeutic doses. Chronic effects of this drug on the circulation, respiration, blood or liver function have not been reported. Meperidine is rapidly absorbed, and detoxified by all tissues, especially the liver. The kidneys excrete the drug and its metabolites.



FIGURE 2

TECHNIQUE

Venepuncture is usually not difficult and should be part of the practising dentist's requisite knowledge. He may be called on to use it in a dental emergency or in his role as an emergency anaesthetist aiding a surgical team for Canada's civil defence plan. A length of rubber tubing is used as a tourniquet to cut off the venous return, leaving the arterial inflow intact in the upper arm, and using a slip knot or locking haemostat for quick release when finished. The elbow joint is fully extended and the arm rested on a rigid support. The practitioner who uses an operating stool can obtain excellent support for the patient's extended arm across his knee (Figure 2). Selecting a well defined vein, the patient is told to clench his fist, and the area swabbed with alcohol. A 23 gauge hypodermic needle is inserted, bevel down, through the skin. The vein is immobilized by support from the tip of the index finger and by stretching the overlying skin with the thumb. The vein is now entered and the needle rotated along the lumen to ensure good insertion. Blood should enter the needle spontaneously if venous pressure is normal. It is necessary to aspirate to ensure that the needle is in a vessel. The tourniquet is next released and the patient instructed to relax his

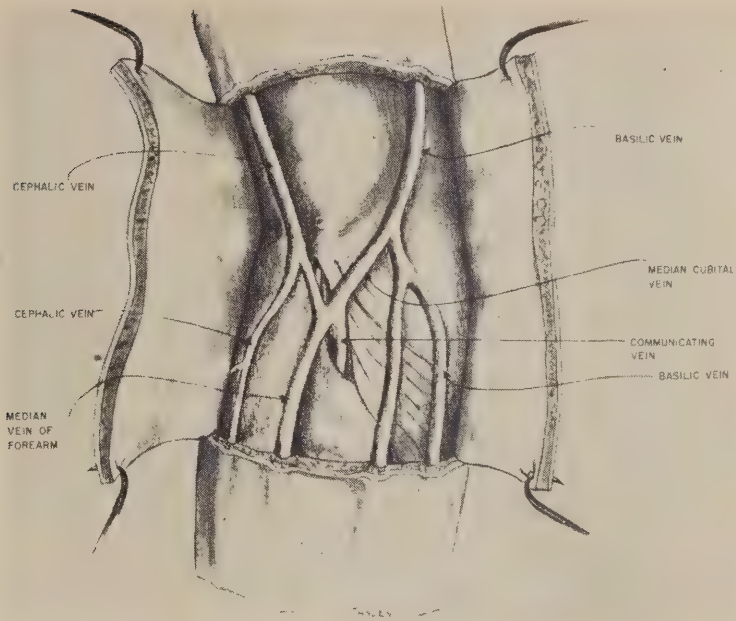


FIGURE 3 Superficial structures in the cubital fossa.

fist, and the desired injection made. In the event that the needle has to be removed in order to try again, pressure is maintained on the vein at the point of needle insertion so as to reduce the likelihood of haematoma formation. Care must be taken to ensure that the tourniquet is released before the injection is made, otherwise the sudden circulation of the sedative can have a more profound and dramatic result than desired.

Pentobarbital and meperidine are miscible. A white precipitate thus often appears in the barrel of the syringe if the original needle for the injection of pentobarbital is left in the vein and used for the injection of meperidine. This has no apparent effect on the drug action or the patient and is probably due to the minimal amounts involved. However, no precipitate is desirable and to eliminate any chance of a precipitate forming after the original pentobarbital solution is deposited, a few cubic centimetres of blood

are withdrawn and then re-injected. In effect this flushes out the needle lumen and no precipitation can subsequently occur.

Care must be exercised in making the venepuncture (Figure 3) so that the intravenous barbiturate is not deposited or allowed to escape outside the vessel walls. Irritation and pain can result. Treatment for this is the application of moist heat. In about 2 per cent of cases the ulnar artery lies superficially in the cubital fossa. The practitioner should ensure that no arterial pulse is felt in the selected vessel. If an intra-arterial injection is made the patient will complain of pain in the forearm and hand resulting from an arterial spasm. If this happens, the injection is stopped at once. The needle is left in the artery and 0.5 per cent procaine injected through same needle. It may also be necessary to arrange for sympathetic block and possible anticoagulant therapy.

SUMMARY

The use of intravenous sedation eliminates the time element experienced with oral premedication. This procedure also provides the practitioner with a remarkably relaxed patient, and when combined with atropine and a local anaesthetic it affords an opportunity to perform the desired procedure under almost ideal conditions. Many patients who would be difficult to manage with a local anaesthetic alone can be successfully handled with this drug combination.

When intravenous pentobarbital is injected slowly, the patient's reaction can be watched and the dosage of the drug carefully adjusted. Anyone using intravenous sedation should be thoroughly familiar with the principles of resuscitation and have the necessary equipment on hand in the office to cope with any respiratory and/or cardiovascular depression that might develop.

Supervised or postgraduate training in the technique of venepuncture is desirable.

The safety and effectiveness of this method of sedation has been adequately investigated by others and has proved its value in the dental clinic at the Canadian Forces Hospital, Kingston.

RÉSUMÉ

L'auteur expose l'emploi en injection intra-veineuse du pentobarbital de sodium, de l'hydrochlorure de meperidine (Demerol) et d'atropine pour produire une sédation chez le patient dentaire ambulante.

Le médicament de base est le pentobarbital utilisé à des doses oscillant entre 100 et 150 mg., cette dernière étant la dose moyenne pour des gens pesant de 140 à 200 lbs. Un 1/150 de grain d'atropine est ajouté quand on veut obtenir un antisialagogue. Si l'effet sédatif désiré n'est pas obtenu complètement avant l'inter-

vention, on injecte de nouveau de 25 à 50 mg. de meperidine en laissant l'aiguille dans la veine et en changeant de seringue.

Le quantité de prémédication à utiliser se base sur les besoins individuels. Il faut songer à l'âge, au sexe, à la taille, à l'histoire médicale, au degré d'appréhension, à l'aspect extérieur, aux habitudes et à la durée et à la difficulté de l'intervention. Les seules contrindications au pentobarbital intra-veineux sont les troubles aux systèmes respiratoire et cardiaque et aux maladies graves du foie. Ce médicament est aussi contreindiqué jusqu'à un certain degré pour les patients qui font de la température et ceux qui souffrent de diabète ou d'anémie.

L'atropine à la dose indiquée n'a pas ou peu d'effet sur le coeur et stimule quelque peu la respiration. Le patient peut ressentir une légère tachycardie et un dérangement temporaire de la vision.

Le meperidine est un analgésique, un antispasmodique et un sédatif léger, mais certain. Il produit une analgésie contre les douleurs légères durant quelques heures (2 à 4 heures), mais il n'agit pas contre les douleurs profondes. Les doses thérapeutiques n'affectent pas d'une façon appréciable la pression artérielle, le coeur ou les poumons. Le meperidine se résorbe rapidement et il est éliminé par tous les tissus, plus spécialement le foie. Les reins excrètent ce médicament et ses sous-produits.

L'auteur termine en décrivant la technique d'injection intra-veineuse employée à l'Hôpital de l'armée canadienne, à Kingston.

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Early Diagnosis of Oral Precancerous Lesions

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The purpose of this paper is to stress the clinical recognition of possible precancerous lesions. It is not within the scope of this paper to discuss the microscopic and biochemical changes that occur in precancerous and early cancerous lesions. These aspects of diagnosis belong to the pathologist and would only tend to complicate this discussion.

Flieder and Morris¹ showed in a survey of senior dental students, that while 75 per cent saw at least one malignant lesion of the oral cavity, only about 30 per cent actually surveyed the lesion and performed a biopsy. Accordingly many students expressed doubt concerning their knowledge of oral cancer and oral pathology. It follows that many practising dentists exhibit some doubt, and hence, miss the opportunity to diagnose early mouth cancers.

The following discussion considers some of the more common precancerous lesions, their clinical appearance, sites involved, and possible aetiological factors involved.

DEFINITION OF PRECANCEROUS LESIONS

Hertz² defines precanceroses as changes in the tissues which may assume malignant characteristics at any time yet may remain unchanged for a considerable period, particularly if irritations are removed. The greatest majority of precancerous lesions are epithelial in origin. Sage³ says that 90 per cent of malignant

tumours of the oral cavity are epithelial in origin, arising in mucous membrane or glands. Other tissues such as connective tissue and vessels must not be disregarded in the search for precancerous conditions, because, when encountered, no delay in diagnosis can be afforded.

Welsh⁴ uses the term precancerous to refer to any lesion which frequently precedes development of malignant growth, and he definitely establishes leucoplakia as one major precancerous disease. He refers to leucoplakia as a "white tablet" which tells a story of chronic inflammation and continual irritation to the affected area, and constitutes a visible warning which says "Take care!"

Thoma⁵ observed that carcinomas occur even in well cared for mouths, and may occur without being preceded by a precancerous lesion. Although authorities agree that the precancerous lesion cannot be simply defined as tissue affected by chronic inflammation, they recognize the inherent danger of chronic inflammatory lesions and excision for prophylactic reasons is recommended as early as possible.

COMMONEST PRECANCEROUS CONDITIONS

Thoma⁵ lists leucoplakia, syphilitic hyperkeratosis of the tongue, chronic hypertrophies, soft and hard papillomas and various benign tumours and cysts as common precancerous lesions. Although rarely occurring in the oral cavity the pigmented naevus can be mentioned as premalignant because it may be the precursor of the extremely invasive and dangerous malignant melanoma.

Canadian Dental Association War Memorial Award first prize essay, 1962.

Leucoplakia, Hyperkeratotic Changes and Papillomas.—Leucoplakia is a descriptive term applied to certain white patches on the mucous membrane. Clinically leucoplakia appears as a thin, leathery white patch. The colour ranges from dull white to grey, and may on occasion assume a reddish hue. Deep fissuring may also be present and when this occurs inflammation is usually observed at the base of the fissures. Pain is not usually a symptom unless the lesion has progressed to the ulcerated stage and secondary infection has occurred. Leucoplakia also seems to have a predilection for males in the middle age group, the incidence ratio of men to women being about 95 : 5. The size of the lesion is one of the most variable features, ranging from small pin point areas to large lesions covering most of the oral mucosa. Often in the medium size and smaller lesions there is a sharp line of demarcation between the keratotic area and the surrounding normal mucosa, which is helpful in diagnosing leucoplakia. Unfortunately, however, as Szerlip⁶ indicates one cannot differentiate on a purely clinical basis which white patch is a benign lesion, which is truly precancerous, or which is a frank malignancy. Consequently the clinician must rely on the microscopic report of the pathologist to formulate an intelligent diagnosis. Kollar⁷ offers a classification in terms of maturation of epithelium as follows:

1. Hyperkeratosis with or without inflammation.
2. Hyperkeratosis, dyskeratosis and inflammation.
3. Carcinoma-in-situ.
4. Epidermoid carcinoma.

By using these classifications confusion in terminology regarding the true meaning of leucoplakia and various hyperkeratoses could be eliminated. Bernier⁸ concurs with this feeling and uses the term "pachyderma oris" to differentiate changes of hyperplasia and keratosis

from the clinically similar lesion displaying dyskeratotic changes which justify the term leucoplakia.

The papilloma is a benign epithelial tumour assuming a cauliflower-like growth above the surface. The tumour has a connective tissue stalk which branches out in tree-like fashion. These lesions are essentially benign but in some instances leucoplakic changes do occur. Clinically the lesion appears as a small, finger-like projection of tissue attached by either a pedicle or broad base. There is a generalized lack of symptoms and papillomas may go unnoticed for long periods of time. If, however, the lesion ever assumes leucoplakic changes it can be considered a premalignant lesion and treated as such.

Atrophic Changes. — Another main clinical group of precancerous changes in the oral mucosa is described by Hertz² as atrophic changes. These are considered the clinical manifestations of certain deficiency conditions, particularly vitamin B₂ deficiency, riboflavine deficiency and iron deficiency anaemia or sideropenia. Associated with these deficiencies is a condition known as the Plummer-Vinson syndrome. The symptoms of this condition are iron deficiency anaemia, dysphagia, brittle finger nails and a constant atrophying stomatitis. On inspection the lips are pale, thin and inelastic and the corners of the mouth may exhibit transverse rhagades. The buccal mucosa shows a red-blue colouring along the occlusal line, and occasionally papillomatous changes occur. The tongue becomes smooth and often without papillae; it may be purple coloured and a tendency to fissuring occurs. Ahlbom⁹ has demonstrated this condition to be a definite precancerosis occurring mainly in women subsequently suffering cancer of the oral cavity in up to 80 per cent of the cases.

The Decubital Ulcer. — The final lesion with precancerous potential is the trau-

matic or decubital ulcer. Long standing trauma and pressures resulting from a variety of dental disorders and patient habits can cause the continual irritation that produces a break in continuity of the mucous membrane. In the category of dental disorders we find sharp and broken teeth, rough overhanging margins of restorations, ill fitting dentures, denture bars and clasps, all of which could cause irritations. The main habit of concern is that of smoking, with coal tar derivatives and trauma from pipe stems being the major offenders.

The size and location of the lesion is usually determined by the cause; when an ulcer does form, secondary infection and necrotic material are usually present and often a ridge of hypertrophic tissue forms around the ulcer. Thus the cause-and-effect relationship is clearly defined and the offending tooth or cause can be determined and corrected. Following removal of the cause regression of the lesion should be quick and uneventful. Any such lesion that does not heal in two to three weeks should undergo biopsy and pathological examination to test for malignancy.

COMMONEST AREAS OF THE ORAL CAVITY INVOLVED

Bernier⁸ states that while microscopic examination is necessary for definite diagnosis and prognosis of oral lesions, it is the clinician who first examines the mouth and his ability to recognize features suggesting malignant behaviour can be the life saving factor for the patient. The clinician must decide whether to treat the lesion, keep it under observation, perform a biopsy or refer the patient to a specialist. He must use the clinical features of the lesion as the basis for this decision. In this respect, knowing where to look for lesions that have a possible precancerous potential makes easier the task of diagnosis.

According to Bernier⁸ 90 per cent of oral tumours occur on the lips. The lower

lip is involved much more frequently than the upper lip and the lateral aspects are usually involved, rarely the midline or commissures. Intraorally the tongue is involved in over 50 per cent of the cases, the sides and ventral surfaces more often than the dorsum of the tongue. The alveolar mucosa, hard and soft palate, floor of the mouth and buccal mucosa are involved with approximately equal frequency. Papillomas are found on lips, tongue, buccal mucosa and other sites but most frequently on the palate. Multiple papillomas are not infrequent, particularly in the palate, although they rarely become malignant.

As mentioned earlier decubital ulcers are usually located in close association to the cause, especially if pressure from a denture or irritation from sharp, rough teeth is the cause. The buccal mucosa and the lateral aspects of the tongue adjacent to the posterior teeth in the line of occlusion are frequent sites of decubital ulcers.

If all these areas are examined thoroughly and methodically and with some thought to the frequency of involvement of the various areas, diagnosis becomes less haphazard and more of a precise art.

DIAGNOSTIC METHODS

History and Examination. — For the early diagnosis of the precancerous lesion an accurate history of the individual patient is mandatory. The history should be systematic and thorough, covering all aspects of present and past dental disorders and certain systemic illnesses as well. The age, sex, occupation, onset of symptoms, quality and severity of pain, etc. must be covered and recorded.

Armed with an adequate history the dentist may proceed to examine the patient. He should avoid concentrating his immediate attention on the teeth. First, he should observe the patient's head and profile before proceeding to the oral cavity. Asymmetries, swellings, loss of

hair, scars, etc. should be investigated further and palpation of the regional lymph nodes should be done at this time.

A systematic examination of the oral cavity should include visual inspection, palpation, percussion and sometimes auscultation. Beginning with the lips, the vermilion border is examined for atrophy, colour and texture. The angles of the mouth are examined for cracks and fissures; any slow healing ulcers are noted carefully. In patients exposed to wind and sunshine the lips may appear smooth and shiny with a tendency to desquamate flakes of keratin. The colour is usually a whitish blue and may progress to white and opaque. In older patients changes of senile cheilitis occur and these changes are often precancerous in nature.

Bidigital palpation is used to examine the full thickness of lips and cheeks. The floor of the mouth is explored by palpation and any deep lesions can usually be detected by this means. The buccal sulci and the gingival tissues can be examined at this time, proceeding in a circuit to include all areas in the mouth.

The tongue can be examined easily and carefully by grasping the tip of the tongue with gauze and gently pulling it forward and from side to side. In this way the dorsum, lateral borders and ventral surface of the tongue can be visually inspected and palpated.

The hard and soft palate are inspected for alterations in contour, swellings or areas of softening. Papillary and ulcerative lesions arising in the palate are easily seen, and when extension to underlying bone is suspected full-mouth radiographic examination is invaluable.

When examining a specific lesion the dentist must have the thought of malignant growth foremost in his mind. The malignant lesion has an irregular, indefinite margin; the floor is hard and the base is fixed to the deep tissues; the edge is usually raised and the regional lymph nodes are usually enlarged and hard. If the lesion under suspicion shows any of

these characteristics biopsy study is indicated.

Biopsy Studies. — Kerr and Hayward¹⁰ suggest that failure of the common inflammatory process to follow the expected course of healing is a valid criterion for biopsy. The following are examples of these changes: definite persistent hyperkeratotic lesions, bone lesions not identified by clinical and radiographic findings, persistent and palpable swellings and ulcers of long duration.

Sharp, cold steel excision is the best method of obtaining biopsy tissue. Antiseptic dyes or anaesthetic solutions should not be applied directly to the area, and crushing or tearing the tissue must be avoided. The specimen must be immersed immediately in a 10 per cent formalin solution to prevent desiccation and to fix the tissue. The tissue selected for biopsy should be representative of the complete tissue changes in the lesion, including margin, base, and centre of the lesion. The biopsy specimen is then sent to the pathologist accompanied by a complete history and clinical description of the lesion. Armed with the biopsy report the dentist can make an accurate diagnosis and he can then discuss with the patient the need for treatment or referral.

Sponge Biopsy. — Procurement of tissue by surgical biopsy is not entirely free of pain, haemorrhage or infection, and in some cases these difficulties have tended to prevent the early procurement of tissue necessary for early diagnosis. Certain of these difficulties can be eliminated by the technique of sponge biopsy. This technique is easily adaptable to the hands of any practitioner.

To quote Gladstone,¹¹ "Sponge biopsy depends on the procurement of tissue particles from accessible ulcerative lesions by means of a suitable sponge firmly rubbed in contact with the diseased tissue." Briefly, a cellulose sponge one-half inch square is rubbed firmly in a circular motion over the base and

margins of an ulcer. The sponge is rubbed on both sides and should be well soaked in oral fluids. A certain amount of pressure is required to abrade the surface cells allowing them to be picked up on the sponge. The sponge is then placed in formalin and subsequently subjected to histological examination, much the same as an ordinary tissue sample is examined.

Because of the simplicity and effectiveness of this operation, sponge biopsy lends itself to routine use in office practice. It is not meant to replace surgical biopsy but to act as a helpful adjunct in diagnosis of precancerous and early cancerous lesions.

Exfoliative Cytology. — Another diagnostic technique which has received considerable attention recently is the technique of exfoliative cytology. Silverman¹² in his fine article, "Intraoral exfoliative cytology" states that characteristic malignant squamous cells are shed from mucosal surfaces in the early stages of cancerous change, even prior to clinical recognition. The cellular changes observed in early cancers included: hyperchromatism, pleomorphism and nuclear change. Montgomery and Von Haam,¹³ however, reported no abnormalities in cell morphology in their study of smears of leucoplakic lesions.

The technique involved is simple and relatively accurate. The mucosa is gently scraped with a plastic instrument with a dull edge. Surface cells are thus collected, spread on clear glass slides and fixed in ethyl alcohol. The staining properties of the cells reflect the various stages of keratinization of the squamous epithelial cell. Differential counts establish cytological patterns that are diagnostic of certain diseases.

Lesions of innocuous and innocent appearance in the precancerous stage often tend to be overlooked as biopsy material. However, in many instances, a cytological examination gives the clinician some indication whether further biopsy

is necessary, or, if more conservative treatment will suffice.

AETIOLOGY OF PRECANCEROUS AND CANCEROUS LESIONS

The exact mechanism by which normal cell processes are changed to rapidly multiplying malignant cells is unknown. The immediate cause of this change is also unknown. However, the role played by certain chronic irritations in carcinogenesis can be proved by experiment and by clinical observations. Many investigators think of chronic trauma as a triggering mechanism acting on some intrinsic factor inherent in an individual's composition. This produces some aberration in the normal maturing processes of the cells involved; the aberration becomes irreversible and the malignancy is thus produced.

The authorities almost unanimously agree that tobacco plays a role in producing oral cancer. Tobacco smoke contains cancerogenic derivatives and chronic thermal injuries are produced by hot pipe stems and cigars in particular. The very act of smoking produces a certain physical irritation to the mucous membrane. This physical act is particularly harmful if the same area is affected repeatedly. For example, a cigarette or pipe held in the same corner of the mouth twenty or thirty times every day of one's life certainly produces irritation to that area. Chewing tobacco which is lodged in the buccal sulcus for long periods of time becomes saturated with oral fluids and cancerogenic chemicals may be leached out thereby producing a high concentration of cancerogenic substance in a localized area. A particularly high incidence of precancerous and cancerous changes is seen in areas where chewing tobacco is held.

Martin¹⁵ in his survey of a section of the population of New York demonstrated that 95 per cent of male patients with mouth cancer are frequent users of tobacco. He also demonstrated that fe-

males with mouth cancer used tobacco about twice as often as the normal female population. Statistics such as these cannot be disregarded and wherever precancerous lesions are suspected there must be a serious and concerted attempt made at controlling the tobacco habit.

Vitamin deficiencies, particularly those of the vitamin B complex, are not uncommon in our population. Clinical symptoms of these deficiencies are lingual oedema, glossitis and atrophy of the papillae of the tongue. There is also a marked susceptibility to leucoplakia of the tongue. The corners of the mouth become fissured and cracked and the lips are usually excessively dry and wrinkled. These degenerative changes, if they have not progressed too far, respond remarkably well to vitamin therapy and diet correction. If, however, these degenerative changes proceed they definitely constitute a cancerogenic factor.

Vitamin A deficiencies have been shown by Medina¹⁴ to produce epithelial metaplasia particularly of the salivary glands. This deficiency may also have some role in the aetiology of cancers.

Although syphilis is infrequently seen in our population nowadays, cases of long duration produce chronic glossitis and inflammation of the oral mucous membranes. A syphilitic glossitis shows loss of papillae and smooth, shiny white areas on the dorsum of tongue. Carcinomatous changes are seen frequently in individuals exhibiting syphilitic glossitis. Martin¹⁵ shows that 20 per cent of the males suffering cancer of the tongue also suffer syphilis; yet the general incidence of syphilis is only between 4 per cent to 6 per cent. This shows that syphilis is a significant aetiological factor in cancer of the oral cavity.

Hertz² remarks "Diseases of the teeth and oral cavity occupy a central position in the series of cancerogenic irritants." Sharp ragged teeth, overhanging margins of fillings and ill fitting prostheses produce chronic irritations of long duration. Dentists play a primary role in detection and correction of these dental disorders

and can thereby contribute greatly to the prevention and prophylaxis of certain precancerous changes in the oral mucous membrane. The dentist must also be aware that cancerous growths may destroy the fit of previously well fitting dentures and he must not mistake the cause for the effect. Although Martin¹⁵ feels the role of dental disorders in cancer production is greatly exaggerated, he does concede that they may act as contributing factors to chronic irritation in the mouth.

Many other less obvious aetiological factors have been advanced in recent years. Some of these are galvanism, hormones, genetics, sunlight, age and viral infections. An interaction of all these mechanisms can act upon the oral mucous membranes to produce chronic irritations. This triggering mechanism coupled with the natural resistance or susceptibility of the individual is probably the ultimate cause of cancerous changes in the mucous membranes.

STATISTICS RELATING TO THE INCIDENCE OF LEUCOPLAKIA IN CARCINOMA

Martin¹⁵ points out that the aetiology of leucoplakia is identical with the main factors of oral cancer. Consequently, the presence of leucoplakia should tend to warn the patient that he is more likely to develop malignancy than the average person.

To carry this point further Martin and Sugarbaker¹⁶ reported leucoplakia present in 25 per cent of the cases of cancer of the floor of the mouth, 46 per cent in cancer of the tongue and 70 per cent of cancer of the cheek. According to the statistics chronic irritation does not play as great a role in the aetiology of cancer in the floor of the mouth as in other areas in the oral cavity.

Sturgis and Lund¹⁷ in a study of 298 patients exhibiting leucoplakia of the oral cavity showed that in a five-year observation period 12 per cent developed malignancy. A 30 per cent ratio of malignancy developing from leucoplakia was found

by McKown¹⁸ in an analysis of 100 patients over a 1.4-year average duration. Thus a range of 12 to 30 per cent incidence of leucoplakia as a precancerous lesion warrants important consideration in diagnosis and treatment of this lesion.

Russ¹⁹ in his review of the literature on oral leucoplakia states that the majority of writers believe leucoplakia is a precancerous lesion, but he also indicates the need for standardization of terminology in the definition of leucoplakia. This would facilitate accurate statistical studies on the incidence of change from precancerous to malignant lesion, the average duration of the precancerous lesion, and thus give the clinician a better opportunity to diagnose and treat precancerous lesions.

PRECANCEROUS LESIONS AND THE DENTIST

The dentist must realize that his responsibilities do not end with the teeth alone. He must concern himself with all aspects of disease of both hard and soft tissues of the oral cavity. Early cancerous lesions are of particular importance because in this respect the dentist may become a direct factor in saving a patient's life.

The dentist has a unique opportunity to serve the public because of the increasing tendency of the public to seek a dental examination once or twice a year. The dentist, therefore, examines the mouths of relatively healthy individuals who seldom need to consult a physician. In addition, because the early precancerous lesion is usually asymptomatic, the patient is often unaware of its existence and would not seek further medical attention unless advised by his dentist.

To quote Welsh,⁴ "The moment an examiner detects, upon the oral mucosa . . . an erythema, a roughness, a white patch, a swelling, an ulceration . . . at that moment the search should begin for causative factors. Irritation should be

lessened at once . . . and stopped very shortly."

The health and very life of a patient are at stake and simply telling him to seek consultation from a specialist is not adequate. A rigorous follow-up procedure should be carried out for the sake of the patient and the peace of mind of the practitioner.

SUMMARY

An attempt has been made to describe the clinical features of some of the more common precancerous lesions encountered in the oral cavity. Some of the primary sites involved and possible aetiological factors are also described. The diagnostic methods described are simple, efficient and relatively painless to the patient.

The dentist, because of his unique position, must avail himself of all possible knowledge of mouth cancer. If the possibility of cancer is kept in mind the dentist can aid in early diagnosis and contribute greatly toward the fight against cancer.

RÉSUMÉ

L'auteur décrit les signes cliniques des formes les plus fréquentes des lésions précancéreuses de la cavité buccale; il énumère aussi quelques-uns des endroits où se développent ces lésions et leurs facteurs étiologiques. Leur diagnostic s'établit au moyen de techniques simples, efficaces et pratiquement indolores pour le patient, c.-à-d., l'histoire de cas, l'examen clinique, la biopsie, la biopsie prélevée à l'aide d'éponge et la cytologie desquamative. Le dentiste, de par ses fonctions, doit se renseigner sur les cancers de la bouche; il peut, en ayant toujours à l'esprit la possibilité d'un cancer, aider au diagnostic précoce et contribuer grandement à la lutte entreprise contre cette maladie.

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157 Front Street

ABSTRACTS

1961 REPORT ON THE BRANTFORD FLUORIDATION CARIES STUDY

H. K. Brown. Ottawa, Dental Health Division, Department of National Health and Welfare, April 1962. Mimeo.

The 1961 survey compares a group of 14- and 15-year-old children (Brantford) who have used a mechanically fluoridated water supply continuously since birth with a group (Sarnia) who continuously since birth had not used fluoridated water, and a second group (Stratford) who continuously since birth had used water naturally fluoridated from underground deposits of fluoride. The exam-

inations were done by the same examiner, using a portable examining light of specific intensity kept at a constant distance, plane mouth mirrors and No. 5 Clev-dent explorers.

Just above 1 per cent of the Sarnia group had caries-free permanent teeth while about 16 per cent of the Stratford and the Brantford groups were caries-free.

Among 100 Sarnia children a total of just under 82 permanent teeth had been lost. Among 100 Brantford children a total of just over 30 teeth had been lost. Among 100 Stratford children about 25 had been lost.

The children of the Sarnia group averaged about 8 permanent teeth per child attacked by tooth decay, the Brantford children just under 4, and the Stratford children about 3.

Freedom from caries experience in the maxillary permanent incisors was recorded in about 50 per cent of the Sarnia group, just under 87 per cent of the Brantford group, and in about 89 per cent of the Stratford group.

No unsightly mottling was observed in any of the children examined. It is of interest to note that about 5 per cent of the Sarnia group showed enamel opacities resembling mottling and about 16 per cent of the Stratford group was recorded as showing slight, mild or moderate mottling. About 20 per cent of the Brantford group was similarly affected.

No ill-effects attributable to the presence of fluoride in the water supply were observed by the dental examiner, or reported by the public health authorities or by the practising physicians in Brantford or in Stratford.

The findings are consistent with those obtained from previous surveys of the native child populations of Sarnia, Brantford and Stratford in showing the beneficial dental effects of about 1 part per million of water-borne fluoride derived either from a natural deposit or added mechanically.

A STUDY OF FOUR METHODS OF PRESENTING DENTAL HEALTH INFORMATION TO PARENTS

P. E. Starkey. *J. Den. Children.* 29:11, 1st quart. 1962.

The need to provide dental health education for parents of his child patients has been a constant concern of the busy paedodontist. Many writers have stated the importance of presenting health information to patients' parents and pointed out the value of visual aids in a good presentation. Nowhere in the literature available, however, could a study be found to

prove that the use of visual aids in presenting educational material was of any more value than the simpler methods of merely reading the information or hearing it on a record. A study was undertaken, therefore, to determine whether four methods of presenting dental health information to parents had value, and, if they did, which was the best.

One hundred and twenty-five parents of children receiving dental care in the Department of Paedodontics at Indiana University School of Dentistry participated in this study. The subjects were selected and placed in one of five categories randomly for the presentation of the information and subsequent objective type-written examination or for the examination alone.

Group 1 was allowed to read the material only. Group 2 read the material and viewed nine slides illustrating the material. The slides were viewed through a small, simple viewer operated by a battery. They included coloured photographs reproduced from the book developed by the American Dental Association, *Teeth, Health and Appearance*. Slides also were included from the investigator's own file representing mouths in need of space maintenance following premature loss of deciduous teeth. The parents in group 3 listened to a recording of the material through earphones. The participants in group 4 listened to the recording and viewed the nine slides. Group 5 provided the controls, receiving no information. Subjects in this group completed the examination merely, whereas subjects in groups 1-4 completed an examination immediately after receiving the material.

All four of the experimental groups performed significantly better than the group of controls, but no one experimental group performed significantly better than another. Those individuals with a high level of education made more correct responses than did those with a low level. The simpler methods of presenting the information were found to be just as effective as the more complicated ones.

EDITORIALS

Banff Dental Research Conference

Earlier this month dental research workers from all parts of Canada gathered at the Banff School of Fine Arts to present reports of investigations and discuss work underway in various laboratories and institutions from coast to coast. An earlier conference held in Toronto last year set the pattern for these events. It is therefore fitting that the venue on this occasion should have been in the magnificent setting of the Rocky Mountains of western Canada.

In a vast country like ours, the great physical distances hamper communication and intercourse. Meetings of this type help to overcome this handicap and foster a sense of kinship so vital to the development of a corps of research workers.

Men of science need the stimulus that comes from personal contact, the interchange of ideas, and challenge to the intellect. Periodic exposure to his fellow-scientist helps the individual to cultivate a searching, critical attitude toward his own work. It is particularly important that the investigator working in one field be informed of what is being accomplished in others. In order that science may advance as a whole, specialization by each requires co-operation by all.

Although other research meetings on this continent may momentarily offer more to some investigators, the potential value of periodic gatherings of Canadian dental research workers should not be underestimated. Accordingly, we com-

mend the Canadian Dental Research Foundation and the Canadian Dental Association under whose joint auspices these conferences were held. The generous financial support of the Procter and Gamble Company of Canada is likewise acknowledged with gratitude.

Addressing the First Canadian Conference on Dental Research in Toronto last year, K. J. Paynter¹ pinpointed these important requirements for the future growth of dental research in Canada: (1) more research personnel; (2) more dental schools to provide the establishment for more research workers; (3) more full-time career research investigators and more time to permit these investigators to perform their tasks; (4) provision of adequate space for research in present and future dental schools; and (5) possible establishment of a Canadian Association for Dental Research, with a view to having it eventually form part of the Canadian Federation of Biological Sciences.

These lofty goals remain unchanged. Periodic meetings of Canadian dental research workers provide a means for gauging progress in the attainment of these objectives. They give our research community an identity. More important, they focus attention on its needs and accomplishments.

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Brantford, Stratford, Sarnia: More Good News about Fluoridation

The latest report from the Department of National Health and Welfare concerning the Brantford-Stratford-Sarnia fluoridation study¹ provides further impressive evidence regarding the efficacy and safety of this important public health measure. This report compares the dental status of 14- and 15-year-old children with lifetime residence in the three communities: Brantford with a mechanically fluoridated water supply since 1945, Stratford with naturally fluoridated water, and Sarnia with fluoride-free water. The findings are significant.

In Brantford and Stratford sixteen times as many children have caries-free permanent teeth as in Sarnia. The mortality of the permanent teeth is roughly three times as great in the Sarnia group as in the Brantford and Stratford children. The average Sarnia youngster has experienced approximately twice as much tooth decay as his Brantford and Stratford counterparts. Almost twice as many of his permanent incisors exhibit caries

experience as those of his schoolmates in the other two cities.

When arrayed with the results of previous surveys, these findings are consistent with the continuing upward progression of the dental health of Brantford's children from a level in 1945 equivalent to that of Sarnia children to a level in 1961 approximating to that of Stratford children. Coming on top of the recent report of the British fluoridation studies at Watford, Anglesey and Kilmarnock in the United Kingdom,² the facts fully vindicate fluoridation. The latest Canadian report should also help to dispel the lingering myth that fluoridation merely delays the onset of dental caries.

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Fluoridation • Dentists have an obligation to convince their patients that fluoridation can reduce dental caries safely and inexpensively by about two-thirds.

C.D.A. Attitude on Dental Insurance • While opposing a comprehensive treatment program "at this time," the Association lists the following conditions which should apply in the event of inauguration of such a plan: (1) intensive dental health education of the public should precede and accompany a treatment program; (2) the age groups to be included should be determined by initial and annual assessments of the people's needs and of the dental personnel and funds available; (3) treatment should be provided by dentists in private practice, on a fee-for-service basis according to an acceptable fee schedule; (4) dentists should be free to participate or not; (5) the rights of patients and dentists to select each other should be protected; and (6) administration should be effected by profession-sponsored dental service corporations. — C.D.A. Brief to the Royal Commission on Health Services.

DENTISTRY IN THE NEWS

Canada and the Provinces

BRITISH COLUMBIA

Scholarship and Bursaries Awarded.—Dean Walter Gage of the University of British Columbia recently announced the winners of the scholarship and bursaries which have been provided from the British Columbia Dental Association's public relations funds:

1. B.C.D.A. scholarship of \$250—Desmond Edwin Espley of Victoria, B.C.

2. Three B.C.D.A. bursaries of \$250 each—Joseph Gris of Kimberley, B.C.; Rolf Jost of Kitimat, B.C.; and James Barton Moore of Victoria, B.C.

Peace River Dental Society.—John Woronuk of Dawson Creek, B.C. was elected president of the Peace River Dental Society at the annual meeting held in Fairview, Alberta recently. Members of the society from all parts of the Peace River district, both British Columbia and Alberta, attended the meeting. Also in attendance were three members of the dental faculty of the University of Alberta: K. A. McMurchy, D. MacGregor and L. Erickson.

Dr. McMurchy gave a presentation on oral pathology in which some of the more recent findings in oral diseases were discussed.

Following the meeting, dentists and their wives attended a banquet in the Grand Hotel and were later entertained at the home of Dr. and Mrs. M. M. Woronuk.

NOVA SCOTIA

Dental Hygienists Form Nova Scotia Unit.—The newly formed Nova Scotia Dental Hygienists' Association held its first meeting at the Faculty of Dentistry, Dalhousie University, Halifax, recently. The association consists of fourteen members. Elected as officers were: Mrs. R. Neilson, president; Mrs. D.

Porter, vice-president; and Mrs. L. Mitchell, secretary-treasurer.

International Items

FEDERATION DENTAIRE INTERNATIONALE

Over 11,700 attend the Cologne Congress.—Nearly 12,000 persons from 86 different countries attended the 13th International Dental Congress and 50th Annual Session of the Fédération Dentaire Internationale at Cologne, Germany, July 7-14, 1962.

About 150 Canadians attended the congress which is held by the Federation every five years. Canadian Dental Association official delegates were J. P. Coupland of Ottawa, H. W. Reid of Toronto, and Association secretary Don W. Gullett, who is a member of the F.D.I. council.

The principal speaker at the opening session of the congress was Dr. Heinrich Lübke, president of the West German Federal Republic. During the opening ceremonies, three international prizes were presented. The International Miller Prize was awarded posthumously to H. Trendley Dean for his fluoridation work. The Albert Joachim prize was presented to P. H. Keyes and Robert Fitzgerald, both of the United States National Institute of Dental Research, for their work on the transmissibility of caries in laboratory animals. F. Ackermann of Switzerland received the Georges Villain prize for research in prosthodontics.

The German Federal Minister for Health, Dr. Elisabeth Schwarzhaupt, opened the International Dental Trade Exhibition at which 450 exhibitors from 19 countries displayed their products. The Association of German Dental Industries reported that 51,000 visitors viewed these exhibits.

The general assembly of the F.D.I. addressed itself to a number of topics, paramount among them being the question of ascertaining and providing for manpower needs in the profession and questions concerning the

European Common Market and its effect on dental practice.

Featured on the scientific program were original papers, short communications, table clinics, panel discussions, televised presentations, and motion pictures on various aspects of dentistry and dental care. Many of the scientific papers which were presented during the congress will be published during the coming year in the *International Dental Journal*.

The development of dentistry over the past 150 years was the theme of a scientific exhibit designed to show the profession what has taken place in dentistry during the past century and a half. Also on display were dental periodicals and publications from all over the world. This exhibit covered 400 publications. A third exhibit was devoted to dental health education material from the archives of the International Office for Dental Health Information which is sponsored by the *Fédération Dentaire Internationale* in Zürich. The exhibit, "The Dentist as an Artist" showed works of art—paintings, sculpture, and various handicrafts—created by members of the dental profession in their leisure hours.

More than 150 dental officers from over 30 countries participated in the international military dental conference, which included papers on the training of the dental officer in maxillofacial surgery, anaesthesia, maxillofacial prosthetics and first aid and mass casualty care, demonstrations and visits to military medical and dental installations.

Two new member associations—the East African Dental Association and the Jordan Dental Association—were accepted into the Federation, bringing the total membership to 62 national dental associations in 51 countries, in addition to the Federation's three affiliate members. At the end of the Cologne congress, the number of supporting members totalled 4,763, exceeding by 125 the previous record of 4,638 members in 1957. Permanent badges designed for supporting members to wear at national and international dental meetings were distributed at the congress. Those Canadian members not in Cologne will receive their badge from the Canadian national treasurer, Don W. Gullett, or direct from the Federation's headquarters office.

The Federation accepted the invitation of the French national committee to hold its next quinquennial dental congress in Paris in 1967. In future, these quinquennial congresses will be called "world dental congresses of the F.D.I." It was also decided at Cologne that the Federation should have more permanent headquarters than its present offices. A building fund was therefore initiated with the 10 per cent of the enrollment fees which the Federation will receive from the 13th International Dental Congress.

Re-elected as F.D.I. president for a further period of one year was Jean Delibéros (France). Hans Freihofer (Switzerland) was similarly re-elected speaker of the general assembly for a further period of one year. To permit better continuity in the long-term planning and greater accuracy in the preparation of the annual budget, it was decided to create a new office, that of president-elect. Erich Müller (Germany), president of the Cologne Congress, was nominated for this position.

The special commission on oral and dental statistics was re-constituted under the chairmanship of L.-J. Baume (Switzerland) for a further period of one year to work on publicity for the world-wide application of the F.D.I. and W.H.O. recommendations on oral and dental statistics, including the use of a uniform classification, nomenclature and statistical methodology; the further elaboration of standard procedures in examining and reporting caries incidence (test studies); the establishment of a documentation centre for published data on dental epidemiology; and the epidemiological assessment of dento-facial anomalies.

The Federation adopted the following resolution as a statement of opinion regarding dental and stomatological education:

"Whereas, every patient has the right to receive the highest possible type of oral and dental treatment, and

"Whereas the basic qualification to render this type of dental treatment rests directly on the education and training of the dental practitioner, therefore be it

"Recommended, that the full responsibility for the dental treatment of the individual patient be placed only on those persons legally and professionally qualified by either: (1) education, training and qualifications in academic institutions whose curricula have been approved by the dental profession, graduates of such institutions being designated as dentists; or (2) education, training and qualifications at academic institutions whose curricula have been approved by the medical and dental professions, provided that such education and training include, or be supplemented by, appropriate dental study, graduates of such institutions being designated as stomatologists; and it be further

"Resolved, that in principle dentists and stomatologists thus educationally qualified shall be deemed equally competent to assume full responsibility for the oral and dental health care of the individual patient. It remains as in the past within the province of each nation to select one or both of the above forms of training."

Stockholm, Sweden, will be the scene of the 51st annual session of the Federation beginning on June 29, 1963 and continuing to July 6. Application forms for enrolment and hotel accommodation may be obtained from the Secretary of the Swedish Organizing Committee, Dr. Torsten Telander, Nybrogatan 53, Stockholm O, or the Secretary Gen-

eral of the F.D.I., 35 Devonshire Place, London W.1., England, and should be returned as soon as possible to Dr. Telander.

POLAND

Reorganize School Dental Health Services.—Complete, systematic dental care for children during the primary school period has been planned by the Polish government and World Health Organization. With the exception of emergency cases, the school dental care service has, until now, been limited to primary school children in the first and last years. In the new scheme, school entrants will be followed up throughout their school life, though during the first years of the project, older children will be eligible for emergency treatment only. It has been estimated that each dentist in the scheme will give complete dental treatment to between 800 and 1,000 children a year.

In November 1960, when W.H.O. advisory assistance was first provided, the Polish government had already established 500 centres for school dental health in cities, while 135 teams, each consisting of a dentist and a dental assistant, were active in rural areas. In 1961, 200 urban centres and 37 rural teams were added.

The project also provides for the improvement of dental health education in teacher training colleges and maternal and child health centres, the instruction of parents on the importance of dental health, and studies on the topical application of fluoride.

UNITED KINGDOM

New National Health Service Dental Fee Schedule.—The presentation of a new schedule of dental fees, involving a reduction from the previous rates, has reportedly met with a mixed reception on the part of Britain's dentists.

This development is an outcome of the acceptance by the British Dental Association and the government of the recommendations of the 1960 Pilkington Report (Royal Commission on Doctors' and Dentists' Remuneration, 1957-1960). The most important of these was the suggestion that in the immediate future the average earnings of a general dental practitioner should be \$7,500 (£2,500) a year, compared to the \$8,250 prevailing at the time the report was published. Also established was a dental rate study group, representing the profession, government

health departments, and time study men, to fix average times for each dental operation, determine the average hours of work per annum, and thus calculate a new scale of gross fees so that a dentist working between 2,050 and 2,200 hours a year would achieve the recommended average earnings. It is this group which formulated the latest fee schedule.

Also advocated was the establishment of a review body of seven members appointed by the government after consultation with the profession. This review body would advise the Prime Minister on the desirable levels of remuneration of physicians and dentists, the levels of remuneration not changing more frequently than once every three years.

In effect, the review body would determine what dentists should earn and the dental rate study group would arrange that this is what they do earn.

The British Dental Association accepted the Pilkington recommendations as a package arrangement, particularly because there was at least one attractive element to compensate for lower earnings, namely the method for altering the level of remuneration. Previously the Minister of Health had been able to raise or lower the rates of payment on his own initiative, and had reduced them twice, early in the life of the National Health Service. Now there was a review body reporting directly to the Prime Minister, and though the government might request a recommendation, it could not dictate the result. Accordingly, the British Dental Association felt that the profession had gained because it now had the right to present its case for a fairer basis of remuneration to this review body.

Some observers believe that in view of the pay-pause, it seems unlikely that the government could ignore the suggestion that present average earnings be reduced, whether the dental profession accepted the Pilkington Report or not. This apparently is not the view of some dentists, however, who feel that a better presentation of the dentists' case could have changed or else prevented the implementation of distasteful recommendations. They also believe that the rising cost of living and increased office expenses have not been fully taken into account.

UNITED STATES

Canadian Appointed Assistant Dean at Tufts Dental School.—Gerald Shklar, a Montreal-born graduate of McGill University was recently appointed acting assistant dean of Tufts University School of Dental Medicine, Boston, Mass. Born in 1924, Dr. Shklar re-

ceived his Bachelor of Science and Doctor of Dental Surgery degrees from McGill University in 1947 and 1949, and his Master's degree from Tufts University in 1952. Currently chairman of the department and professor of Oral Pathology at Tufts University, Dr. Shklar is also professor of Dental History, research professor of Periodontology and director of the Tufts University Cancer Teaching Program. He is also visiting oral pathologist in the Department of Dentistry at Boston City Hospital and lecturer in Oral Pathology at the Forsyth Dental Infirmary's school for dental hygienists in Boston.

Postgraduate Education Program Scheduled in New York.—The First District Dental Society will present a program of short postgraduate courses in various fields of dentistry during November and December 1962. Further information may be obtained from J. J. Adelson, Supervisor, Postgraduate Education Program, First District Dental Society, Hotel Statler-Hilton, 7th Avenue and West 33rd Street, New York 1, U.S.A.

Temple Dental School Stages Centennial Reunion.—The one-hundredth anniversary of the School of Dentistry, Temple University, Philadelphia, will be observed in 1963. The two-day celebration scheduled for April 30 to May 1, 1963 will feature an "open house," including student demonstrations, lectures and talks by outstanding members of the dental profession, and the conferring of honorary degrees upon several world-renowned

dental personalities. Further information may be obtained by Canadian alumni from the Alumni Office, Temple University School of Dentistry, 3223 North Broad Street, Philadelphia 40, Pennsylvania, U.S.A.

Royal Canadian Dental Corps

R.C.D.C. COMMEMORATES U. S. NAVY DENTAL CORPS — FIFTIETH ANNIVERSARY

A ceremony to commemorate the 50th anniversary of the founding of the United States Navy Dental Corps was recently conducted by the Royal Canadian Dental Corps School in Camp Borden.

Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces, presented a Royal Canadian Dental Corps plaque as a "birthday present" and "in evidence of the high mutual esteem in which the two Corps hold one another" to Commander R. R. Troxell, the United States Navy exchange instructor to the R.C.D.C. School in Camp Borden.

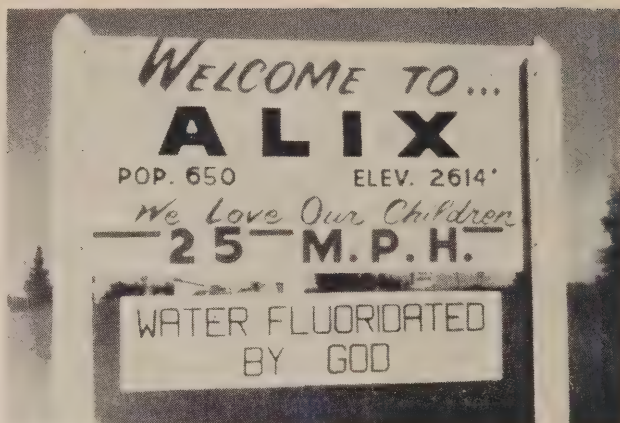
The Royal Canadian Dental Corps and the United States Navy Dental Corps have worked closely together for a number of years, interchanging concepts bearing upon various aspects of military dentistry.

National Defence Photo



Brig. K. M. Baird, Director General of Dental Services for the Canadian Forces, left, recently presented a Royal Canadian Dental Corps plaque to Commander R. R. Troxell, U. S. Navy exchange instructor to the R.C.D.C. School, right, in recognition of the fiftieth anniversary of the founding of the U. S. Navy Dental Corps.

Alix, Alberta, has become the first town in Canada to erect at its city limits a sign announcing that the water supply is fluoridated.



As part of the ceremony, Commander Troxell, who is serving as the first exchange instructor to the School, showed a documentary film on the U. S. Navy Dental Corps.

DENTAL OFFICER LEADS CHAMPIONSHIP RIFLE TEAM

In a presentation ceremony held at Connaught Ranges, Ottawa on August 18, Major J. C. Brick of the Directorate of Dental Services received the Letson Trophy from the Chief of the General Staff, Lieutenant-General G. Walsh. This trophy is presented annually to the team winning the Canadian Army Rifle Championship. Major Brick accepted the trophy on behalf of the Army Headquarters team, of which he is the captain, and which will represent the Canadian Army at Bisley in England next summer.

Public Health

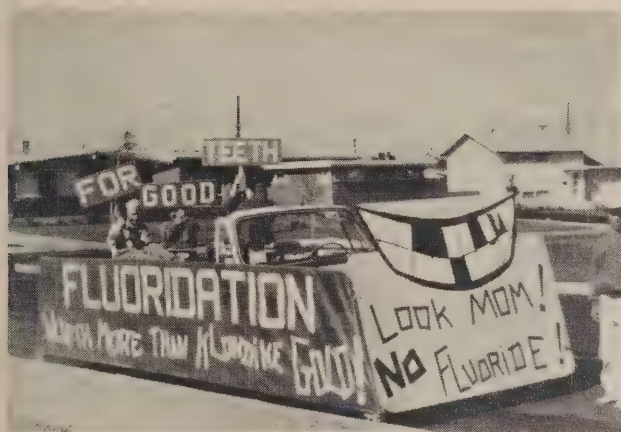
ALBERTA TOWN ADVERTISES ITS FLUORIDATED WATER

Alix, Alberta has become the first community in Canada to erect at its outskirts a

sign which reads: "Water Fluoridated by God." The town has naturally fluoridated water containing about 1.1 p.p.m. fluoride. This action was taken as a result of the activities of a prominent anti-fluoridationist member of the Alberta legislature who earlier this year requested the provincial Minister of Health to erect warning signs in all Alberta towns with fluoridated water supplies. The people of Alix evidently did not take too kindly to this suggestion.

PRO-FLUORIDATION FLOAT IN EDMONTON EXHIBITION PARADE

A float promoting fluoridation of the city's water supply was featured in this year's Edmonton Exhibition Parade on July 16. The float was built by the Edmonton Fluoridation Council, a lay group. C. R. Castaldi, a prominent Edmonton paedodontist and staff member of the Faculty of Dentistry, University of Alberta, is president of the fluoridation council. The float was preceded by a block-long "Burma Shave" type sign display. Each sign was carried by a young lad from a local baseball team. The signs read: "Tight money in force," "Trouble paying dental bills?" "Try," "Fluoridation." "These Alberta towns have it:" "Devon, Fort Saskatchewan," "Leduc, Fairview," "Etc. etc.," "Edmonton next," "We hope!" "Calgary last!" "As usual!" Then followed the float.



Pro-fluoridation float featured in this year's Edmonton Exhibition Parade. The float was built by a lay group, the Edmonton Fluoridation Council.

ANNOUNCE TWO INNOVATIONS FOR TORONTO DENTAL HEALTH PROGRAM

The annual report of the Director of Dental Services of the City of Toronto Department of Public Health for 1961 reveals that the modest improvement in dental health conditions among the city's preschool and school children was maintained during the past year. However, there was little change as compared to the previous year. Rather ominously, the percentage of children who have "visited a dentist" continues to deteriorate while the percentage of children with "complete caries neglect" remains stationary at 18.23 per cent of the total preschool and school population. The report relates these findings to the high level of immigration into the downtown areas in recent years coupled with the continuing decline in the number of practising dentists in the central areas of the city and the movement of the younger practitioners to the newer suburban residential areas.

Because of the delay in introducing water fluoridation, topical application of 8 per cent stannous fluoride solution became available to all preschool-grade 2 children who are either caries-free or who have had all carious teeth restored as evidenced by bite-wing radiographic surveys. This program commenced October 1, 1961. The fluoride applications are performed by dental hygienists in three health districts which have the services of a dental hygienist, and by dental clinicians in the remaining five health districts.

Also in 1961 an arrangement was executed between the city and the Faculty of Den-

tistry, University of Toronto whereby public and separate school children receiving dental care in city clinics and requiring minor oral surgical procedures necessitating a general anaesthetic are referred for service to the Faculty of Dentistry.

108,244 elementary and secondary school children received dental screening examinations during the year. 51,245 children did not require attention at the time of the examination. 63,835 notifications for specific dental defects (dental caries, space maintenance, malocclusion, oral hygiene, gingivitis and other defects) were issued.

6,615 children in odd age groups from three to nineteen years received detailed examinations. 34.56 per cent had no dental defects. 43.37 per cent had no caries defects. The average number of permanent and deciduous teeth needing restoration was 1.89. 11.25 per cent of the children were caries-free. The average D.M.F. and d.e.f tooth surface indexes were 3.77 and 2.43 respectively.

19,491 patients were seen in the course of 40,871 clinic attendances at the department's clinics. Of this number, 8,970 patients received complete dental (caries) treatment, 80.7 per cent of all case completions occurring in children below age 10.

Preschool dental programs manned by dental hygienists and supporting personnel operated in three health districts. Two additional dental hygienists joined the department in July 1962 to extend their services to two more health districts.

Staff dental hygienists and members of the graduating class in dental hygiene at the Faculty of Dentistry, University of Toronto again participated in a preschool registra-

tion program during the spring of 1961 in one of the eight health districts. 599 kindergarten entrants to 11 district schools were screened and interviewed with their parents. 325 children were referred to private dentists and 274 to the department's dental clinics for necessary dental care. Most of these

children were either completely rehabilitated or under treatment when they entered school in September.

The replacement of dentists on the eight dental inspection teams by dental hygienists, and expansion of the clinical personnel are again strongly recommended.

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

THALIDOMIDE, EMBRYOPATHY, AND POSSIBLE VIRUSES

To the Editor:

There is nothing in the chemical structure of thalidomide¹ (alpha [N-pthalimido] glutarimide) to suggest that it may seek out and alter the biological code of chromosome deoxyribonucleic acid (DNA), nor to support its direct intervention in nucleic instructions.² Up to the present, only maternal rubella (German measles) and generalized cytomegalic inclusion disease (cytomegaloviruses) are proven teratogenic agents for humans which may induce congenital defects in utero. (Various other viruses, such as influenza virus, have been suspected as being embryopathic but definitive evidence is lacking.)

Of greater interpolative value regarding the possible mode of action of thalidomide is the recent work of several American investigators (Dalldorf, Toolan et al) at the Sloan-Kettering Institute, New York. They

isolated viruses directly from human cancer patients⁴ and human embryos.⁵

For fear of virological cross-infection at their institute, this work was corroborated by two British investigators, Buttler and Kay.⁵ May I propose the possibility that these occult DNA-containing hamster osteolytic-dentotropic viruses (H-1 and H-3) derived directly from human embryos may, through activation by thalidomide, have been responsible for cases of phocomelia? The destructive effects of viral infections are exerted at genetic rather than metabolic levels, and the unique hamster skeletal (osteolytic-dentotropic) viruses are probably no exception to the general rule.^{6,7}

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Montreal 8, P.Q.

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6. Luria, S. E. Bacteriophage Genes and Bacterial Functions. *Science* 136:685, May 25, 1962.
7. Axelrad, A. A. Genes, Chromosomes and Antigens in the Evolution of Malignant Cell Populations. *Canad. Med. Ass. J.* 86:1153, June 23, 1962.

BOOK REVIEWS

FUNDAMENTALS OF KERATINIZATION

E. O. Butcher and R. F. Sognnaes. Washington, American Association for the Advancement of Science, 1962. 189 p. Illus. \$6.50

This book is a collection of papers by eighteen authors who contributed to a symposium on the fundamentals of keratinization under the sponsorship of the American Association for the Advancement of Science.

The scope of the program is broad and covers the fields of interest of dentistry, medicine, dermatology and the allied basic sciences. The techniques used in presenting the material range from that of morphology through histochemistry, to tissue culture and electron microscopy. Collectively they review the present knowledge and controversies pertaining to keratin in all its forms. The dentist will find especial interest in the studies on the culture of tooth germs and the processes of keratinization of the oral mucosa, as well as the unique epithelial structure of enamel.

Much of the recent knowledge comes from the newer techniques of biochemistry, histochemistry and the electron microscope, and the interested student will find the individual chapters stimulating and provocative reading. It is a book for the advanced student that collates under one cover the various theories and data on the subject.

H. A. Hunter

FLUORIDE DRINKING WATERS

F. J. McClure. Washington; U. S. Department of Health, Education and Welfare: Public Health Service; 1962. 636 p. Illus. \$3.50

Fluoride Drinking Waters is a bound selection of United States Public Health Service research papers on the physiological and dental effects of fluoride. The first article of

the volume was published in 1901 and the most recent one will appear in a scientific journal in 1962.

In this book the research papers are gathered into seven distinct sections and are printed in the order in which they were originally published. In this manner the reader is given a most interesting account of the fluoride facts as they have been discovered and accumulated. The seven sections dealt with are as follows:

1. Endemic Dental Fluorosis (Mottled Enamel).—The discovery of mottled teeth and the painstaking research which traced the cause to the presence of large amounts of fluoride in the drinking water. This section contains all of Dean's early work in this regard.

2. Relation of Dental Caries to Fluoride Drinking Waters.—Studies in natural fluoride areas which showed that fluoride occurring in drinking waters inhibited dental caries.

3. Fluoridation of Drinking Water and Control of Dental Caries.—The accumulation of evidence year by year through the Grand Rapids fluoridation study is outlined in this section. Of particular interest is the last paper showing dental effects after fifteen years of fluoridation. Also dealt with are the engineering aspects of fluoridation and caries inhibition by fluoride not provided by a community water supply.

4. Topically Applied Fluoride and Dental Caries Control.

5. The Physiological Effects of Fluoride.—This section contains the evidence of the exhaustive research which has been carried out to determine the health status of human populations exposed to fluoride drinking water.

6. Experimental Laboratory Research Relative to the Effects of Fluoride.—Experimental dental fluorosis, inhibition of experimental dental caries by fluoride, fluoride metabolism and retention in calcified tissues.

7. Quantitative Analysis and Chemical Reactions of Fluoride.—Analysis of fluoride, reactions of fluoride ion with enamel and dentine and water defluoridation.

All dentists today are being asked questions about fluoridation. The reviewer can

think of no better way of preparing oneself to answer them than by reading this fascinating historical account of sixty years of research by the U. S. Public Health Service.

D. J. Yeo

FUNDAMENTAL TECHNIQUES OF PLASTIC SURGERY AND THEIR SURGICAL APPLICATIONS

I. A. McGregor. Ed. 2. Edinburgh and London, E. & S. Livingstone Ltd., 1962. (Available from the Macmillan Company of Canada Ltd.) 286 p. Illus. \$5.85

Although Dr. McGregor's book is a comparatively small one, its organization, direct presentation of subject, and his excellent style of writing, make it quite possible for him to cover the subject well. Generous use of illustrations with half tone prints and line drawings add materially to the value of the book. The material covered is directed primarily to the plastic surgeon and to the general surgeon who uses the principles of plastic surgery. This second edition differs from the first in that a chapter has been added on maxillo-facial injuries, and the more complex instructions on surgery of the eye lids have been omitted. Parts of the book will be of interest to all dentists and of practical value to those who specialize in surgery or work in close collaboration with the general surgeon in hospital practice.

The material is organized under two broad headings. The first part, consisting of four chapters, includes the basic techniques associated with plastic surgery. Chapter 1 describes in a fundamental way proper tissue handling, positioning of incisions, suture placement, and wound healing. The next three chapters include Z-plasty, free skin grafts and flap procedures.

The second part of the book includes the surgical applications of the previously described techniques as they apply to certain problems in general surgery. The first chapter in this section describes and discusses the eradication of malignant growths of the face, and plastic surgery for the repair of the wounds. The final chapter is devoted to maxillo-facial injuries, and is well written and well illustrated. It describes methods

for direct and indirect fixation of the maxillary bones. Here, the reviewer feels that, in common with many British writers, the author shows some bias toward the use of cap splints as opposed to the use of wires in indirect fixation. It has been this writer's experience that interdental wiring is successful as a definitive treatment for a large majority of cases.

In sum, the book merits definite consideration by many practitioners of dentistry.

W. R. Schram

A MANUAL OF ORAL SURGERY TECHNIQUES

Warren R. Schram. Philadelphia, W. B. Saunders Company, 1962. (Available from McAinsh & Co. Ltd., Toronto and Vancouver.) 172 p. Illus. \$6.50

The author has given us the first Canadian textbook on oral surgery, and for this alone, he is to be greatly complimented and congratulated.

This is a concise manual of 170 pages, which is primarily directed to the dental student, and to the general practitioner of dentistry. It is clearly not intended for the qualified oral surgeon.

The book deals mainly with the basic fundamentals of surgery and with exodontia. Emphasis is placed on the "mechanical how" and not on the "scientific why" of tooth extraction. The relative positions of the patient and the operator, and the disposition of the operator's fingers are well covered and illustrated. While this reviewer cannot generally agree with all of these, or with the author's choice of instruments for specific operations, nevertheless, this makes for interesting reading and discussion.

Parts five and six, which are made up of chapters twelve to fifteen inclusive, deal with some pertinent minor oral surgery problems. The author makes no mention of any aspects of major oral surgery. Jaw fractures, oral tumours and the surgical treatment of jaw deformities are not included.

This book, even though it falls short of what a text on oral surgery should be, is nevertheless a worthwhile contribution to the literature, and this reviewer recommends it to all dentists.

A. A. Antoni

ADDITIONS TO THE LIBRARY

- CAWSON, R. A. Essentials of dental surgery and pathology. London, Churchill, 1962. 436 p. illus. \$10.50.
- COHEN, D. W. and GOLDMAN, H. M. Periodontal disease in children. (Practical Dental Monographs, July 1962.) 35 p. illus. Philadelphia, Saunders, 1962. 280 p. illus. July 1962. Symposia on I. Dental caries, II. Tissue regeneration and transplantation. Philadelphia, Saunders, 1962. 280 p. illus.
- FLETCHER, G. H. and MacCOMB, W. S. Radiation therapy in the management of cancers in the oral cavity and oropharynx. Springfield, Thomas, 1962. 396 p. illus. \$18.25.
- HOLT, L. E., McINTOSH, R. and BARNETT, H. L. Pediatrics, 13th ed. New York, Appleton-Century-Crofts, Inc., 1962. 1,395 p. illus. \$19.75.
- HUGHES, F. N. Compendium of pharmaceutical specialties. Suppl. No. 3, 1961. 128 p.
- LEWIS, D. S. The Royal College of Physicians and Surgeons of Canada, 1920-1960. Montreal, McGill University Press, 1962. 241 p. \$9.00.
- MACDOUGALL, J. C. and NIXON G. S. A guide to dental therapeutics. London, Cassell, 1962. 223 p. \$3.05.
- McLARTY, M. Illustrating medicine and surgery. Edinburgh, Livingstone, 1960. 159 p. illus. \$6.75.
- MERK MANUAL OF DIAGNOSIS AND THERAPY. 10th ed. Rahway, N. J., Merck, 1961. 1907 p. \$7.50.
- PROSKAUER, C. and WITT F. Pictorial history of dentistry; testimonies of 5,000 years. Köln, W. Germnay, Verlag M. Dumont Schauberg, 1962. 220 p. illus.
- SARNAT, B. G. and LASKIN D. M. Diagnosis and surgical management of diseases of the temporomandibular joint. Springfield, Thomas, 1962. 90 p. illus. \$6.00.
- SCHRAM, W. R. A manual of oral surgery techniques. Philadelphia, Saunders, 1962. 172 p. illus. \$6.50.
- SNYDER, M. L., SLAWSON, M. and PARKER, R. B. Bacteriology, for dental students; a laboratory manual. Minneapolis, Burgess, 1961. 123 p. illus. \$3.80.
- SOGNNAES, R. F. Chemistry and prevention of dental caries. Springfield, Thomas, 1962. 231 p. illus. \$10.00.
- U.S. PUBLIC HEALTH SERVICE. Fluoride drinking waters. F. J. McClure, editor. P.H.S. No. 825. Washington, Govt. Print. Off., 1962. 636 p. illus. \$3.50.
- WHEELER, R. C. An atlas of tooth form. 3rd ed. Philadelphia, Saunders, 1962. 151 p. illus. \$5.95.

Board of Governors • The Board of Governors of the Canadian Dental Association is composed of members selected by dental organizations in all ten provinces. The Board meets annually just before the national convention of the Association. Any member of the Canadian Dental Association may participate in the Board's annual meeting. Canadian dentists are urged to avail themselves of this opportunity to participate in the affairs of their profession.

Transactions of the Canadian Dental Association • The Association's *Transactions* contain reports of the activities of the various bureaux, councils and committees. Published in English and in French after every meeting of the Board of Governors, it is recommended reading for all Canadian dentists.

IN MEMORIAM

EDGAR WATSON PAUL — Dr. E. W. Paul of Toronto, Ontario died on August 18, 1962. He was 83. Born in Feversham, Ontario, he attended the Royal College of Dental Surgeons of Ontario and graduated in 1901. From that time Dr. Paul practised in Toronto. He served on the faculty of the dental school of the Royal College of Dental Surgeons from 1908 until 1925, and subsequently in the Department of Oral Surgery of the Faculty of Dentistry, University of Toronto until 1948. From 1941 until 1949 Dr. Paul was a director of the Royal College of Dental Surgeons of Ontario. He was also an honorary life member of the Royal College of Dental Surgeons, the Ontario Dental Association and the Toronto Academy of Dentistry. Surviving are his wife, Pansy; two sons, Ross

H. and E. Bruce Paul; and two daughters, Mrs. J. M. Stewart and Mrs. T. A. Gordon, all of Toronto.

ALVIN BEVERLY PORTER — Dr. A. B. Porter of Vancouver, B.C. died on August 15, 1962. He was 67. Born in Baldur, Manitoba in 1895, Dr. Porter served in the Royal Flying Corps in the first world war. He studied dentistry at the Royal College of Dental Surgeons of Ontario, graduating in 1921. He practised for some time in Manitoba, and subsequently moved to British Columbia. During the second world war Dr. Porter served with the Royal Canadian Dental Corps. He is survived by his wife, Muriel; two sons, four grandchildren, two brothers and four sisters.

CONVENTIONS

Academy of Dentistry, Toronto, Annual Winter Clinic.
Royal York Hotel, Toronto. November 22, 1962.

Guest Clinician	HUGH COOPER, Ann Arbor, Michigan: Successful Fixed Prosthesis
Luncheon Speaker	H. K. BROWN, Dental Consultant, Department of National Health and Welfare, Ottawa: Water Fluoridation

This year's Winter Clinic offers a varied program and practical information covering the fields of endodontics, prosthodontics, gold foil restorations, radiology, occlusal correction, practice management, oral diagnosis, and dental laboratory problems. Programs are available from the Academy of Dentistry, 230 St. George Street, Toronto 5, Ontario.

CANADIAN DENTAL ASSOCIATION RETIREMENT SAVINGS PLAN

Statement of Unit Valuation as of August 31, 1962

GOVERNMENT BOND FUND

Investment at market value	\$242,882.83	
Accrued income (interest)	1,193.38	
Cash on deposit	43.27	
TOTAL	\$244,119.48	
Less: Administration fee of $\frac{1}{8}$ of 1% of \$244,119.48	305.14	
MARKET VALUE OF FUND	\$243,814.34	
Units outstanding	21,386.924	
UNIT VALUE OF FUND	\$	11.400

CORPORATE BOND FUND

Investment at market value	\$428,485.38	
Accrued income (interest)	2,108.47	
Cash on deposit	28.69	
TOTAL	\$430,622.54	
Less: Administration fee of $\frac{1}{8}$ of 1% of \$430,622.54	538.28	
MARKET VALUE OF FUND	\$430,084.26	
Units outstanding	35,312.083	
UNIT VALUE OF FUND	\$	12.179

COMMON STOCK FUND

Investment at market value	\$915,298.26	
Accrued income (interest)	—	
Cash on deposit	3.72 DR	
TOTAL	\$915,294.54	
Less: Administration fee of $\frac{1}{8}$ of 1% of \$915,294.54	1,144.12	
MARKET VALUE OF FUND	\$914,150.42	
Units outstanding	66,803.837	
UNIT VALUE OF FUND	\$	13.684

Trustee: The Royal Trust Company.

Information about the C.D.A. Retirement Savings Plan is available from Mr. J. T. Staddon, 2249 Yonge Street, Toronto 7, Ontario, Telephone HU. 1-5731; or any branch of the Royal Trust Company.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

Date	Function	Location	Officer	Address
Oct. 9-11, 1962	2nd Canadian Conference on Dental Research	Banff School of Fine Arts	Dr. C. W. B. McPhail	Faculty of Dentistry, University of Alberta, Edmonton, Alberta
Oct. 15, 1962	H. K. Box Memorial Lecture	Faculty of Dentistry, University of Toronto	Dr. C. H. M. Williams	124 Edward Street, Toronto 5, Ontario
Oct. 29-31, 1962	Montreal Dental Club Annual Convention	Queen Elizabeth Hotel, Montreal	Dr. J. Vincelli	6542 Somerled Avenue, Montreal, P. Quebec
Oct. 29-Nov. 1, 1962	American Dental Association	Miami Beach, Florida	Dr. J. S. Oartel	222 East Superior Street, Chicago, Illinois
19-25 novembre, 1962	XXXV ^{ies} Journées dentaires internationales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre-Haret, Paris 9e, France
Nov. 22, 1962	Academy of Dentistry, Toronto, Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St. George Street, Toronto 5, Ontario
Feb. 16-23, 1963	Second Caribbean Dental Convention	Trinidad Hilton Hotel, Port-of-Spain, Trinidad	Dr. A. V. Awon	43-45 Frederick Street, Port-of-Spain, Trinidad

POSTGRADUATE AND REFRESHER COURSES (CANADA)

TORONTO—The Department of Paedodontics, Faculty of Dentistry, University of Toronto offers a postgraduate course in PAEDODONTICS, January 7-8, 1963. The course will cover the broad field of dentistry for children, with emphasis on mental growth of the child, oral diagnosis, treatment planning, nutrition in relation to paedodontics, oral manifestations of systemic disease, treatment procedures related to interception of malocclusion, and operative dentistry. The course will be directed by Dr. S. A. MacGregor. Tuition fee \$40. Enquiries and requests for application forms should be directed to the Chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 2, Ontario.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

ALABAMA—November 10-11, 1962 — Dental Assisting
 NEW YORK—November 29-30, 1962—Principles and Practice in Endodontics
 OHIO STATE—November 12-14, 1962—Oral Surgery
 OHIO STATE—November 26-30, 1962—Complete Denture Prosthodontics
 PITTSBURGH—November 14-17, 1962—Complete Denture Construction
 PITTSBURGH—November 29-December 1, 1962—Crown and Bridge Prosthodontics
 TEMPLE—November 5-10, 1962—Clinical Endodontics

Further information concerning dental meetings outside Canada is available at C.D.A. headquarters on request. Requests for further information concerning postgraduate and refresher courses should be directed to the sponsoring institutions.

L'Association Dentaire Canadienne.

JOURNAL

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Causes de faillite des obturations en amalgame

par G. H. DESCHÊNES,* D.D.S., Montréal, P. Qué.

L'amalgame est le matériel obturateur le plus universellement utilisé; il permet une reconstitution fidèle de la substance dentaire, il s'adapte avec souplesse aux parois de la cavité, il a une résistance convenable aux chocs de la mastication; il rend des services inappréciables en dentisterie opératoire.

L'amalgame a toutefois des faiblesses inhérentes à sa structure; le dentiste peut les atténuer en l'employant avec circonspection, soit dans la préparation de la cavité que le contient, soit dans la manipulation du matériel lui-même. Des recher-

ches entreprises aux Etats-Unis ont révélé que de mauvaises préparations de cavités sont responsables dans une proportion de 56% des faillites des obturations en amalgame.¹

Enfin, l'obturation des cavités avec l'amalgame, comme avec toute autre substance — or, acrylique, ciment, etc — est susceptible, si elle est faite sans soin, de causer des réactions à l'endodonte et aux tissus avoisinant la dent.

DÉFAUT DANS LA PRÉPARATION DES CAVITÉS

Ablation de carie. — Les omissions dans la préparation des cavités se retrouvent à divers stades du travail; le premier défaut

Première partie d'une communication présentée le 20 mars 1962 à la Société dentaire de Montréal.

*Professeur à la Faculté de chirurgie dentaire, Université de Montréal.

s'établit dans l'ablation incomplète de la carie. Les opinions varient au sujet de l'ablation de la carie. On croit en certains milieux que les bactéries se dessèchent sous une obturation et deviennent inactives.

Black² et d'autres chercheurs sérieux prétendent au contraire qu'il faut curetter toute la carie, même jusqu'à l'exposition de la pulpe, s'il y a lieu. Nous croyons que cette théorie est la bonne.

Massler,³ à la suite de Bonsack, qu'il a corrigé, parle de coiffage indirect.

Il recommande, dans certains cas, s'il y a danger d'exposer la pulpe, de ne pas enlever toute la carie à la même séance; il conseille d'enlever la carie à la limite extrême, sans découvrir la pulpe, de déposer un pansement à l'oxyde de zinc et engénol pour une semaine ou deux et de terminer l'ablation avant l'obturation finale.

La dentine et la pulpe subissent ainsi l'influence quelque peu aseptique du médicament et le coiffage qu'il faudra peut-être effectuer sur une brèche pulpaire a plus de chance de succès, car, dans ces conditions, l'infection a beaucoup moins de prise.

Il est peut-être vrai que de petits îlots de carie laissés çà et là sous une obturation ne causent pas de récurrence. Il est possible que ces traces de carie ne causent pas d'ennui, car la dent se défend bien. Un concours heureux de circonstances (état général du patient particulièrement excellent, réaction spontanée de la dentine à former une barrière de défense à la pénétration de la carie, élaboration rapide de dentine secondaire) peut jouer favorablement en présence de carie sous une obturation. La radiographie montre parfois des amas de carie sous une obturation qui semblent encapsulés.

On ne peut, toutefois, à la lumière de conditions spécifiques, établir un principe général sur des bases aussi aléatoires.

Il se peut, malgré cette innocuité temporaire de la carie laissée au fond d'une cavité, qu'un réveil s'opère et que cette recrudescence s'étende rapidement au sein

de cette masse de dentine déjà déminéralisée. Ce substrat idéal favorisera une propagation rapide de la carie.⁴

Extension pour la prévention. — La deuxième cause de la faillite des obturations en amalgame s'explique par le manque d'extension pour la prévention. Le dentiste oublie parfois les règles de l'extension. Il suffit de faire un léger retour en arrière et de se rappeler brièvement les zones immunisées et les zones susceptibles de la dent.

Les portions de la dent où la carie se rencontre rarement sont les suivantes: la partie sous-gingivale, le point de contact et la crête, les cuspidés, les 2/3 occlusaux des surfaces buccales et linguales, les crêtes marginales et les angles.

Les zones exposées à se carier sont les suivantes: sillons, le 1/3 gingival et la partie située entre le contact et la crête du septum gingival (cette facilité à la carie s'explique par un contact anormal avec la dent voisine amené au cours d'une mauvaise éruption des dents ou à la suite de la perte d'une dent qui a causé un relâchement dans l'arcade).

C'est un défaut très commun de ne pas étendre la forme de contour d'une cavité jusqu'aux zones immunisées. Le dentiste contemporain, grâce aux appareils dont il dispose, n'a plus de raison d'écourter la préparation d'une cavité. Une carie qui n'occupe qu'une partie de sillon nécessite toujours une cavité qui comprend l'élimination complète de tout le sillon et l'extension de son angle cavo-périphérique sur des plans de cuspidés ou de crêtes.

Une carie proximale doit parfois s'attaquer par la face occlusale et, là encore, il faut ouvrir tout le sillon contigu à cette première ouverture jusqu'à une crête; le sillon occlusal est complètement ouvert, sauf dans la première prémolaire inférieure et dans la première molaire supérieure (deux dents qui ont habituellement des crêtes médianes).

Les cavités des faces proximales, sauf pour les silicates dans les dents antérieures, nécessitent l'ouverture de toute la

région du contact de façon à ce que l'obturation se termine sous-gingivalement et assez loin, buccalement et lingualement, pour que la brosse à dent puisse facilement atteindre le joint émail-obturation.

Forme de rétention.— Les formes de rétention sont importantes. Les isthmes inter-cuspidiens, dans la cavité occusale, peuvent avoir des parois légèrement convergentes, ce qui d'ailleurs renforcit l'amalgame à la périphérie dans ces régions, tout en augmentant la rétention de l'obturation. On doit pratiquer dans la partie proximale des rétentions profondes. En effet, la dentine sous-jacente, sous la force de la mastication, peut se défléchir et pousser au dehors la partie proximale de l'obturation. Par ailleurs, l'amalgame lui-même peut se déformer, soit à cause d'une faiblesse inhérente du matériel, soit à cause d'une déformation plastique ou "flow."

Cette rétention dans la partie proximale consiste en un sillon continu pris à même la dentine, qui part de l'angle axio-bucco-occlusal et descend vers le gingival qu'il parcourt d'un côté à l'autre pour remonter lingualement jusqu'à l'angle axio-linguo-occlusal.

Fracture.— Les obturations en amalgame se brisent parfois au cours de la mastication, parce que les cavités manquent de profondeur. Il faut que la partie occlusale d'une obturation en amalgame ait, après la sculpture du matériel, au moins un millimètre et demi d'épaisseur dans la région du sillon central. Il est à conseiller, pour augmenter encore la résistance, d'incliner la paroi axiale vers le centre de la cavité et de briser l'angle axio-occlusal.

Fragilité de l'angle cavo-périphérique.— La préparation d'une cavité avec un angle cavo-périphérique aigu ou obtus prédispose aux fractures. L'émail cède au cours de la condensation de l'amalgame ou au cours de la mastication, si, à cause d'un angle trop aigu, il est miné à l'intérieur. L'amalgame, par ailleurs, ne pourra pas supporter le traumatisme masticatoire si

l'angle cavo-périphérique est trop obtus. Ces bris créent des crevasses qui favorisent la récurrence de la carie. La turbine ne peut pas finir parfaitement les parois d'émail. La coupe est tellement rapide que les bâtonnets peuvent être coupés dans tous les sens sans qu'ils ne soient complètement détachés. Il faut utiliser à tout prix les ciseaux; ceux-ci servent encore à incliner légèrement vers la gencive les parois gingivales et à ainsi rapprocher l'angle proximo-gingival de l'angle droit.

Ce sont là les principaux défauts que peuvent avoir les cavités et qui nuisent au rendement des obturations en amalgame.

DÉFAUTS DU MATÉRIEL OBTURATEUR

La substance obturatrice peut aussi jouer un rôle dans les faillites des obturations en amalgame.

La substance obturatrice, quand elle n'est pas bien malaxée, condensée ou isolée, peut jouer un rôle dans les faillites des obturations en amalgame.

Sous-malaxage.— Le sous-malaxage affaiblit l'obturation, parce qu'ainsi des particules d'alliage ne sont pas pénétrées par le mercure et la cristallisation ne se fait pas d'une façon homogène. La résistance du bloc n'est pas aussi solide, le pourtour se fracture et s'effrite à la moindre provocation, la surface est plus faible devant la corrosion.⁵

Excès de malaxage.— L'excès de malaxage, dans une faible proportion, n'a d'autre conséquence que de diminuer légèrement l'expansion initiale du matériel. Toutefois, s'il est outré, il augmentera le danger de fracture de l'amalgame au cours de la première heure qui suit l'insertion, car il prolonge beaucoup la période de cristallisation.

Appareils de malaxage.— Tous les appareils à mesurer l'alliage et le mercure ne donnent pas toujours un rendement parfait; ils se détraquent facilement. La seule formule recommandable, à part

l'emploi nécessairement trop fastidieux de la balance, consiste dans l'utilisation de quantités pesées à l'avance (par exemple, les *Sigrens* de S. S. White ou les pastilles d'alliage de Caulk).⁶

Les malaxeurs automatiques donnent un meilleur résultat et des malaxages plus uniformes. L'alliage et le mercure peuvent se triturer à la main, mais, à cause des circonstances particulières du travail de l'opérateur, les rendements ne sont pas aussi stables. Le dentiste aura bientôt à sa disposition des appareils qui malaxeront l'alliage d'une consistance favorable à son insertion immédiate, sans qu'il ait à l'essorer.

Condensation. — Une cause fréquente des fractures des obturations en amalgame réside dans le manque de condensation de la substance obturatrice. Cette condensation varie selon la force physique de l'opérateur; elle change aussi chez le même opérateur aux différentes heures de la journée. On connaît plusieurs façons de fouler l'amalgame: la condensation au ponce, celle faite avec un gros brunissoir ovoïde ou avec des fouloirs manuels ou mécaniques. Celui qui malaxe à la main l'alliage et le mercure s'expose, à la fin d'une journée harassante, à préparer des amalgames de moins en moins bons: de même, celui qui insère un amalgame trouve avantage à utiliser des appareils mécaniques pour la condensation. Ceux-ci annulent la fatigue qui s'accumule d'heure en heure. Il y a plusieurs appareils de ce genre sur le marché: l'*Electro-Mallet* (de McShirley Products), le *Pneumatique* (de Clev-Dent), l'*Amalpack* (de Midwest), l'*Imperator* (de Kerr), le *Cavitron* et le *Dentatus*, ce dernier est tout simplement merveilleux dans l'obturation des classes V. Ils ont tous la qualité de rendre le travail de l'opérateur plus facile, moins fatigant et plus uniforme. Ils procèdent presque tous par petits chocs qui aident énormément à l'extraction du mercure. La condensation, pour minimiser la déformation plastique de l'obturation, a comme but d'en extraire la plus grande quantité possible de mercure.

Contamination. — Le défaut le plus commun des obturations en amalgame réside dans la pénétration de liquides de toute nature dans la substance obturatrice: transpiration de la main, salive, sang, etc. La moindre manipulation des doigts contamine aussitôt l'amalgame.

La contamination se produit aussi aisément au cours de l'insertion. La matrice, si bien ajustée soit-elle pour les cavités de classe II, ne peut prévenir tout suintement gingival ou toute pénétration de salive par capillarité ou par contact avec un rouleau de coton qui en est imbibé. Si on ne peut s'assurer, dans les cavités de classe V, de l'étanchéité de la cavité, c'est une récurrence de carie assurée à plus ou moins brève échéance!

La contamination provoque un dégagement d'hydrogène dans la masse d'amalgame. Cette libération d'hydrogène exerce une pression au sein du métal et y crée des vésicules qui se traduisent en une obturation à texture de gruyère et d'aspect galleux. Cette pression peut même provoquer une douleur assez vive, si l'obturation voisine la pulpe.

Le seul moyen sûr de prévenir la contamination consiste dans l'emploi de la digue; elle est recommandée, non seulement pour éviter la contamination, mais aussi pour faciliter le travail de l'opérateur.

Surfaces rugueuses. — Le polissage est le couronnement d'une obturation. Cette opération permet d'éliminer les surplus de métal que l'opérateur aurait omis d'éliminer au cours de la sculpture et qui seraient restés en contact avec les surfaces d'émail; ces prolongements d'amalgame sur l'émail, en se fracturant, entraînent des crevasses aux périphéries et invitent des récurrences de carie. Le polissage crée une surface polie sur laquelle glissent les aliments sans y adhérer prévenant ainsi la corrosion et la récurrence.

Ainsi se résument les causes les plus fréquentes des faillites des obturations, dues à la préparation de la cavité et à la manipulation du matériel. Mais il y a

encore celles qui impliquent les tissus de la dent et les tissus de support.

Traumatisme de l'endodonte. — Ces traumatismes qui affectent l'endodonte sont chimiques et physiques; ils portent atteinte à l'intégrité de la pulpe au point souvent de la mortifier. Ces irritants chimiques (médicaments trop caustiques — nitrate d'argent, phénol, acide ortho-phosphorique des phosphates de zinc et des silicates) ne détruisent pas nécessairement toute la pulpe, mais ils affectent les odontoblastes sous-jacents à la couche dentinaire traumatisée. Cette irritation met en jeu la réaction de défense naturelle de la pulpe.⁷ Les irritants physiques peuvent être plus dangereux encore. Le fraisage à haute vitesse, par la chaleur intense qu'il dégage, a augmenté le danger de chauffer la pulpe. Il faut donc arroser copieusement la dent en toutes circonstances, si ce n'est pour corriger l'articulé d'une prothèse.

Le milieu électrolytique de la cavité buccale favorise, en présence de métaux de différents potentiels électriques, la production d'un courant galvanique dont l'intensité peut atteindre un seuil suffisamment élevé pour amener une mortification de la pulpe. Les dents en antagonisme peuvent souffrir davantage de ce phénomène, parce qu'il y a choc électrique plutôt que courant continu. Il faut donc redoubler de prudence et isoler ces obturations par un ciment.

Traumatisme des tissus avoisinants. — Les tissus périodontaires souffrent souvent de l'obturation d'une cavité; ces traumatismes peuvent produire des effets immédiats (coup de fraise dans le septum gingival) et des effets lointains (surplus d'amalgame sous la gencive).

Le dentiste, au cours de son travail de dentisterie opératoire, devrait se faire un point d'honneur de préserver l'intégrité des tissus périodontaires; il doit, à cette fin, manipuler et utiliser avec une très grande dextérité les instruments nécessaires et les techniques mises à sa disposition. La façon la plus logique de protéger le tissu gingi-

val au cours de la taille des cavités, est d'employer la digue; elle éloigne la gencive des instruments tranchants et permet plus de latitude dans l'usage des instruments.⁸

La mise en place d'une matrice pour l'obturation d'une cavité de classe II exige aussi beaucoup de soin. Il n'existe pas de matrice universelle; il faut toutes les adapter (les tailler) aux cas particuliers pour protéger le tissu gingival. Une matrice ne devrait pas s'enfoncer plus d'un demi-millimètre dans la crevasse de Gottlieb, à la paroi gingivale de la partie proximale de la cavité; elle doit être éloignée de la gencive là où elle ne fait qu'entourer la dent pour se maintenir en place. Elle doit toujours être coincée en contact étroit avec la paroi gingivale pour éviter la pénétration d'un surplus d'amalgame dans la crevasse; l'opérateur, pour éliminer cet excès, est obligé parfois de léser les fibres gingivales de la membrane périodontaire.

Il faut toutefois éliminer les dépôts d'amalgame logés dans la crevasse, car ceux-ci sont susceptibles d'occasionner des ennuis périodontaires assez graves.

Il ne suffit pas d'obturer une cavité; il faut restituer à l'obturation les formes originales de la dent, c'est-à-dire une morphologie fonctionnelle. La face proximale de l'amalgame doit être l'objet de soins particuliers. Les angles de la dent et la face proximale presque plane qu'ils délimitent à l'aide du point de contact constituent des caractères qu'il faut redonner à la dent pour maintenir l'intégrité du septum interdentaire.⁹

Le contact doit être plus ou moins large bucco-lingualement pour que la nourriture puisse glisser sur le versant buccal ou lingual de la gencive et non pas sur le faite du septum; les aliments, toutefois, doivent venir en contact latéralement avec le septum gingival de façon à activer sa circulation sanguine. Il en est de même pour les cavités de classe V, où la gencive doit être protégée; il faut rétablir et même accentuer la convexité de l'obturation près de la gencive, pour que les aliments glis-

sent sur la muqueuse et ne s'emmagent pas dans la crevasse.

Les sillons créés à la face occlusale doivent être les aboutissements des plans de cuspides; le point de contact doit être précédé d'une crête marginale qui arrête la coulée des aliments vers la face proximale. Les aliments sans cette crête, avec déversoir buccal ou lingual, s'accumuleront au point de contact; ils s'écouleront, à la fin, entre les deux dents et exerceront une irritation du septum gingival.

Toute dent obturée doit retrouver son articulation normale et fonctionnelle. Une sous-occlusion occasionne une inflammation de la membrane périodontaire et met en danger la vitalité de la pulpe; elle favorise d'ailleurs une fracture de l'obturation et de parcelles d'émail; c'est rendre un mauvais service au patient. Une sous-occlusion expose aussi à des complications: la membrane périodontaire voit alors son rôle physiologique atténué et son tonus affaibli. Une dent en sous-occlusion a tendance à sortir de son alvéole pour rejoindre son antagoniste; les contacts et les crêtes marginales se déséquilibrent; les aliments se logent entre les dents, il y a récurrence de carie et trouble du périodonte.

CONCLUSIONS

L'opérateur adroit, s'il est honnête, se doit de tout mettre en œuvre pour prodiguer des services dignes d'un professionnel; la préparation de la cavité, le choix des médicaments, la manipulation de la substance obturatrice, son insertion, la morphologie et le polissage des obturations sont des opérations qu'il faut exécuter avec minutie et conscience, quand il s'agit de restaurer la fonction première de l'appareil masticateur.

SUMMARY

The author reviews some of the commoner factors involved in the failure of amalgam restorations. The causes are to be found in the preparation of cavities and in the handling of the filling material.

The commonest defects of cavity preparation include partial removal of carious material, insufficient extension of the cavity, faulty retentive form of the cavity, lack of depth of the cavity, and fragility of the cavo-peripheral angle of the cavity.

Faulty preparation of the filling material includes insufficient or excessive mixing of alloy and mercury, lack of condensation, contamination, rough finished surface of the restoration, and faulty occlusion.

Trauma to adjacent tissues during cavity preparation and insertion of the filling is another factor which has discredited amalgam as a filling material.

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Les Plans d'assurance-pension de l'A.D.C. • L'Association dentaire canadienne offre à ses membres, en plus d'autres avantages, un plan d'assurance-pension, un plan d'épargne-retraite, un plan d'assurance-hospitalisation, un plan d'assurance-groupe pour la maladie et les accidents et un plan de protection contre les frais fixes du cabinet. On écrit au Plan d'assurance-pension de l'A.D.C., 2249 rue Yonge, Toronto 7, Ontario.

L'hygiène dentaire considérée à l'échelle professionnelle

par LOMER LEMIEUX, D.D.S., D.H.D.P., Montmagny, P.Qué.

Une pensée subtile de Montaigne nous enseigne que "pour le bien des hommes, il leur est nécessaire de frotter, de limer et de polir leur cervelle au contact de celle des autres hommes".

Le septième Congrès de l'Association dentaire de la province de Québec nous apporte du nouveau: un colloque où librement nous analyserons ensemble une structure importante de notre profession: l'hygiène dentaire publique.

Dès le début, je réclame la liberté d'exposer sur le sujet des idées personnelles en tant qu'hygiéniste; idées qui n'ont pas reçu ou qui ne recevront pas nécessairement l'approbation officielle du Ministère de la Santé.

En raison du peu de temps alloué et à l'avantage d'une discussion ordonnée, je me limiterai à souligner à votre attention les points suivants:

1. l'hygiène dentaire publique revêt-elle des caractères différents de l'hygiène dentaire?

2. le praticien est-il justement conscient de l'efficacité de l'hygiène dentaire publique?

3. est-il préférable de dissocier les principes de l'hygiène dentaire publique et de les considérer séparément?

L'hygiène dentaire publique revêt-elle des caractères différents de l'hygiène dentaire? Nous sommes tous habitués, je crois, à considérer l'une et l'autre sous le seul angle de l'éducation.

L'hygiène dentaire est avant tout une discipline au service "d'une science qui enseigne les moyens préventifs essentiels

à la sauvegarde de la santé dentaire de l'enfant et de l'adulte." Tous les dentistes en sont responsables et elle s'adresse plus à l'individu qu'à la masse. Mais qu'elle soit individuelle ou collective, certains, avec raison, voient pour la profession, dans l'éducation en hygiène dentaire, un danger d'encombrement par les soins dentaires; d'autres avancent que les efforts dans ce domaine sont suffisants en raison du petit nombre d'effectifs disponibles en matière de traitements.

Ces différentes opinions nous portent à croire que l'hygiène dentaire, en tant que discipline commandée, doit entrer dans les cadres d'une structure fondamentale de notre profession, c'est-à-dire, l'hygiène dentaire publique. Cette dernière est en même temps "une science et un art qui ont pour objectifs: prévenir les maladies bucco-dentaires, prolonger la vie des dentures, promouvoir la santé et l'efficacité des dents et des tissus environnants, par la mise en œuvre de mesures éducatives, préventives et correctives au sein de la population."

Dans ces conditions, l'éducation en hygiène dentaire est soumise à une planification qui tient compte du recrutement des dentistes, de leur établissement selon une répartition géographique plus équitable, des besoins différents des populations, de l'aide possible des auxiliaires dentaires, etc. . .

Dans un plan d'ensemble à long terme, l'éducation justement appelée par un confrère "l'instrument universel de prévention" ne s'adresse plus différemment soit à ceux qui peuvent retransmettre les connaissances ou soit à ceux qui sont plus directement intéressés. Dans un programme unifié, l'éducation populaire et l'éducation individuelle marchent de pair

Conférence prononcée au congrès de l'Association dentaire de la province de Québec, à Chicoutimi, le 26 mai 1962.

avec l'éducation professionnelle et la complète. L'éducation occasionnelle, dont les titulaires de classes sont responsables, appuie l'éducation formelle dont les dentistes sont responsables.

Le triste tableau, que nous présentent les statistiques sur l'incidence de la carie dentaire, nous incite à réclamer l'application d'une mesure d'hygiène dentaire publique comparable à la vaccination contre les maladies contagieuses, mesure nécessaire à l'efficacité d'un programme d'hygiène dentaire publique: éducation, mesures de prévention secondaire: le dépistage précoce et la surveillance dentaire, démonstration des soins préventifs. Aussi nous conseillons que la fluoration soit contrôlée par l'organisme d'hygiène dentaire publique au point de vue technique, épidémiologique et statistique.

Un professeur de l'Université Columbia a écrit: "La dentisterie constitue une branche importante du Service de Santé concernant directement les dents et les tissus adjacents de la cavité buccale et indirectement les autres parties de l'organisme." Et Strusser définit ainsi la dentisterie du Service de Santé publique: "C'est un effort scientifique, opératif et éducatif qui a pour but la prévention et le contrôle de "la maladie dentaire" au sein de la communauté".

Dans sa politique d'hygiène dentaire publique, l'Association dentaire canadienne déclare "qu'un programme d'hygiène dentaire doit faire partie intégrante au bénéfice de la population d'un programme de santé en général, être conçu et dirigé par un dentiste qui, autant que possible, aurait reçu une formation spécialisée en hygiène dentaire publique."

Comme on peut le prévoir, avec une planification de l'hygiène dentaire publique orientée vers la prévention directe et indirecte de même que vers la correction préventive et la recherche, dans les cadres d'un programme de santé en général, l'éducation en hygiène dentaire serait vraiment au service de la profession.

Au fait, le praticien est-il justement conscient de l'efficacité et de l'importance de l'hygiène dentaire publique organisée

de façon à constituer une structure de base de la profession? Est-ce dû à son individualisme? Nous en venons trop souvent à penser que cela ne peut intéresser que l'individu ou la population. Peut-être avons-nous trop longtemps surveillé la santé dentaire du haut de notre tour d'ivoire ou dans l'anonymat? Est-ce dû à l'idée que l'on se fait en considérant l'hygiène dentaire publique sur le seul plan de l'éducation de la masse? La surveillance dentaire, la correction préventive sont des principes d'hygiène dentaire publique qui trouvent leur place logique dans un programme à condition de servir à l'éducation.

Est-ce possible qu'une mauvaise orientation, faute de planification, fasse craindre une frustration des droits du praticien? C'est pourquoi, il est urgent que l'on se mette d'accord sur les principes d'hygiène dentaire publique pour que celle-ci devienne vraiment une structure de base au service de tous les membres de la profession.

Les trois principes: éducation, prévention et correction, intimement liés l'un à l'autre dans un programme, peuvent susciter parmi la population une demande de plus en plus grande pour des soins adéquats et amoindrir les besoins de soins encombrants pour la profession, parce que disproportionnés à notre idéal et facteurs de troubles au sein même de notre profession.

Il semble logique de penser que cette structure de notre progression n'exclut pas les autres, mais qu'elle prend place, au point de départ, devant toutes les autres et les justifie. L'orientation qu'on peut lui donner dans un plan à long terme nous permettra d'unifier les efforts de tous les intéressés selon les besoins. L'organisme responsable de l'hygiène dentaire publique, à cause de son immense champ d'action, intensifierait les campagnes d'éducation et les efforts de chacun pour des réalisations plus concrètes.

Il est difficile d'expliquer seulement par le manque de ressources pécuniaires le fait qu'une faible proportion de la population réclame de nous des restaurations den-

taires et des soins adéquats. Il est difficile aussi de croire que le prestige du dentiste comme médecin de la bouche ne soit pas ce qu'il devrait être seulement par le manque de principes professionnels de nos membres. Nous avons l'expérience du préjugé qui existe dans certains milieux selon lequel le dentiste est un arracheur de dents. Il est en effet regrettable que le manque d'éducation et le peu de connaissance des principes élémentaires d'hygiène dentaire dans une partie de la population obligent le dentiste à refouler parfois dans la pratique ses principes professionnels. Le dentiste est sans cesse à la merci d'une incompréhension, parce que le public souvent considère l'hygiène dentaire comme une question d'importance secondaire et la perte des dents comme un ennui passager plutôt qu'un dommage grave.

Pour changer cette mentalité qui persiste encore malgré les grands progrès de notre profession dans le domaine des restaurations dentaires, il reste beaucoup à faire. Il nous faut imprimer au sein de la population de notre province, et en particulier parmi les écoliers, le sens de la valeur d'une denture en bon ordre, le sens de la valeur et de l'efficacité des restaurations dentaires; ce qui contribuerait à rendre moins aigus certains problèmes de notre profession, comme la justification des honoraires raisonnables, la pratique illégale, les extractions faites en série dans certains petits hôpitaux de milieu rural et celles faites sans discernement par les médecins, etc.

Certains me reprocheront d'être trop idéaliste et de manquer d'objectivité; ils suggéreront peut-être de dissocier les principes de l'hygiène dentaire publique et de les considérer séparément.

Je crois que c'est justement le manque d'idéal, le manque d'orientation et le manque d'unification qui ont donné moins de poids aux efforts personnels pourtant très appréciables.

Dans le domaine de l'hygiène publique, le travail a une plus grande portée d'action quand il s'exerce dans les cadres d'un organisme statutaire qui peut joindre ensemble tous les principes d'action.

Quoiqu'aucun organisme ne puisse exercer une action complète, il y a plus de chance de succès lorsque les efforts sont concertés et ils sont plus rentables s'ils sont collectifs, plutôt qu'individuels.

La diversité même des problèmes de santé a fait évoluer et les entreprises d'hygiène et les objectifs qu'elles veulent atteindre. Cependant, parmi les nombreuses disciplines d'hygiène publique, l'hygiène dentaire est celle qui a retardé davantage dans son évolution, faute de n'avoir pas modifié ses objectifs et de n'avoir pas unifié son plan d'action. Comme dans les autres domaines, les initiatives devront nécessairement obéir à une nouvelle conception: il ne s'agit plus simplement de lutter contre la maladie une fois qu'elle s'est déclarée, mais d'aller au devant d'elle afin de prévenir ses coups et d'empêcher ses ravages. Cette tactique, partout où elle a été suivie, a produit des résultats merveilleux. Ceux qui y recourent n'ont qu'un seul regret, celui de ne pas l'avoir employé plus tôt. Essentiellement, elle est à base d'éducation et de surveillance régulière.

Ce qui compte en hygiène publique, c'est d'ébranler l'opinion publique par tous les moyens d'action. A ce moment, il faut des objectifs précis, une planification des principes et des moyens d'action, une orientation du travail d'équipe, des normes pour l'évaluation de ce travail et des directives établies selon les prérogatives de chacun des responsables.

En résumé, l'éducation en hygiène dentaire, dans les cadres d'une structure fondamentale de la profession, profitera à tous les membres, si l'on tient compte de l'orientation à donner aux principes propres à l'hygiène dentaire publique. Dans l'application de ces principes, l'administration de la technique professionnelle devra être sous le contrôle de la profession, car tout en empruntant, bien entendu à la discipline médicale, à la discipline scientifique, ce qui est nécessaire d'adjoindre à sa propre technique, la discipline dentaire a un statut bien déterminé que l'on se doit de défendre pour le respect de notre profession.

SUMMARY

The author describes the field of activity and the duties of the public health dentist. He does so in order to clarify the nature of this work for general practitioners and to seek the support of this latter group. Public health dentists and

practising dentists work toward the same goal. Sometimes, however, there is misunderstanding due to a lack of knowledge about the role of the two respective groups. This article is intended to clarify any misconceptions. Closer integration of the efforts of the two groups is urged.

23 St-Jean-Baptiste

Objectifs de l'Association dentaire canadienne • Le premier objectif, tel qu'écrit, de l'Association dentaire canadienne est le suivant: "Cultiver et faire progresser l'art et la science de la chirurgie dentaire et de ses domaines connexes et soutenir l'honneur et les intérêts de la profession dentaire."

Statistiques sur la fluoration au Canada

Bureau des recherches économiques de l'A.D.C.

TABEAU 1 Pourcentage de toute la population des municipalités qui fluorurent leur eau, 1956-1962.

Année	Pourcentage
1956	2.1
1957	5.8
1958	5.9
1959	6.1
1960	6.0
1961	7.4
1962	8.4

TABEAU 2 Pourcentage de toute la population des municipalités qui fluorurent leur eau, par provinces, en 1962.

Province	Pourcentage
Terre-Neuve	0.0
Ile-du-Prince-Edouard	0.0
Nouvelle-Ecosse	23.0
Nouveau-Brunswick	0.0
Québec	3.2
Ontario	5.7
Manitoba	57.6
Saskatchewan	23.2
Alberta	2.5
Colombie britannique	3.5
Territoires du nord-ouest	21.3
Yukon	34.2
Canada	8.4

Suite de l'article, "La fluoration au Canada, 1962," qui a paru dans le numéro de septembre 1962 du *Journal de l'Association Dentaire Canadienne*.

TABEAU 3 Referendums tenus en 1961.

Province	Ville	Nombre de votes		Décision
		pour	contre	
Terre-Neuve				
Ile-du-Prince-Edouard				
Nouvelle-Ecosse				
Nouveau-Brunswick				
Québec				
Ontario				
	Atikokan	1,018	320	oui
	Cochrane	158	298	non
	Fort William	3,215	8,806	non
	Kapuskasing	754	1,355	non
	King	148	305	non
	Oakville	4,132	3,518	oui
	Pembroke	1,349	2,923	non
	Port Arthur	5,393	6,235	non
	Port Hope	721	1,977	non
	Renfrew	1,434	1,342	oui
	Stouffville	432	715	non
	Streetsville	948	427	oui
	Tecumseh	252	399	non
	Trenton	895	1,052	non
	Wawa	333	609	non
	Whitby	874	784	oui
Manitoba				
Saskatchewan				
	Uranium City	PR	PR	oui
Alberta				
	Athabasca	80%	20%	oui
	Bonnyville	PR	PR	oui
	Brooks	52%	48%	non
	Calgary	30,373	30,499	non
	Coaldale	67%	33%	oui
	Edmonton	35,508	22,107	non
	Fort Saskatchewan	371	176	oui
	Leduc	354	113	oui
	Ralston	215	43	oui
	St-Albert	75%	25%	oui
	St-Paul	PR	PR	nul
	Taber	265	235	non
	Westlock	103	106	non
Colombie britannique				
	Dawson Creek	653	873	non
	Kamloops	1,215	776	oui
	Langley	218	291	non
	North Kamloops	792	577	non
	Powell River	1,098	1,497	non
	Summerland	436	562	non
Territoires du nord-ouest				
	Hay River	394	28	oui

LES ACTUALITES DENTAIRES

L'Association

ASSEMBLEE DU COMITE NATIONAL DE RECRUTEMENT

Le comité national de recrutement de l'Association dentaire canadienne s'est réuni à Toronto, le 1er octobre. Le comité, formé à la réunion annuelle de l'A.D.C. de 1960, s'est assemblé, une première fois, en 1961. Son président fait rapport périodiquement au conseil d'enseignement.

Les membres actuels du comité sont les suivants: W. J. Dunn, Toronto, président; R. R. McIntyre, Calgary; R. G. Ellis, Toronto; D. C. Steeves, Moncton; Gustave Ratté, Québec. Neuf provinces ont constitué des comités provinciaux de recrutement.

Le Canada

NOUVEAU-BRUNSWICK

On apprécie les services dentaires d'urgence. —Selon un editorial du *Moncton Transcript*, la Société dentaire de Moncton, encore cet été, comme au cours des années dernières, a mis sur pied un "service dentaire d'urgence pour les fins de semaine," du 1er juin au 1er septembre. La Société avait fait publier, sous forme d'annonce dans ce journal, une "Notice professionnelle" demandant à tout citoyen de Moncton, ayant besoin de service dentaire d'urgence, durant la fin de semaine, entre ces dates, de signaler un certain numéro de téléphone (382-8387) pour qu'on s'occupe de lui.

Les citoyens en général apprécient hautement ce système mis en porce par la Société dentaire, plus particulièrement ceux qui ont eu à s'en servir.

Un membre de la Société, en vertu de ce système, reste en disponibilité durant toute la fin de semaine. Les dentistes de la ville se relaient à tour de rôle pour assurer ce service, durant la saison d'été.

La Société dentaire, en organisant ce service d'année en année, témoigne à la population une marque de dévouement peu ordinaire.

SASKATCHEWAN

Des observateurs de Saskatchewan étudient sur place le système de Nouvelle-Zélande. — Le Ministère de la santé publique de Saskatchewan a délégué, cet été, trois observateurs pour étudier sur place le système des infirmières dentaires de la Nouvelle-Zélande.

La délégation comprenait le docteur Arthur Chegwin, directeur du service d'hygiène dentaire de cette province, le docteur Joseph Schachter, de Saskatoon, représentant le Collège des chirurgiens dentistes et M. Cyril MacKay, chef comptable du Ministère de la santé.

La pénurie de dentistes et de personnel auxiliaire en Saskatchewan avait incité le gouvernement à s'intéresser au système d'infirmières dentaires de la Nouvelle-Zélande. Le Ministre de la santé publique de Saskatchewan, l'Hon. G. W. Davies, a déclaré que son gouvernement n'avait pas décidé au préalable d'établir ce système en Saskatchewan. En Nouvelle-Zélande, des infirmières dentaires sont formées pour obturer et extraire les dents des enfants dans des cliniques scolaires et pour mettre en œuvre certaines mesures préventives. On apporte peu de surveillance à leur travail).

Ce comité d'enquête a aussi étudié la formation et l'utilisation des auxiliaires et l'influence exercée sur la santé dentaire des adultes de Nouvelle-Zélande. Chacun des délégués présentera son propre rapport.

Les Facultés dentaires canadiennes

L'UNIVERSITE DE COLOMBIE BRITANNIQUE NOMME LE DOYEN DE SA FACULTE DENTAIRE

Le docteur John B. Macdonald, président de l'Université de Colombie britannique fait

part que le docteur S. Wah Leung, professeur de biologie buccale à la faculté dentaire de l'Université de Californie, à Los Angeles, et diplômé de l'Université McGill, vient d'être nommé doyen de la faculté de chirurgie dentaire de l'Université de Colombie britannique.

Le docteur Leung a occupé son poste en septembre et il doit commencer à élaborer les plans de cette nouvelle faculté.

Le docteur Leung, né en Chine, a commencé ses études à Edmonton et à Vancouver. Il fréquenta l'Université de Colombie britannique de 1937 à 1939 et s'inscrivit à la faculté dentaire de l'Université McGill, en 1943, où il remporta la médaille d'or des finissants. Il a aussi obtenu son diplôme de B.Sc., à McGill. Il a reçu un Ph.D. en physiologie de l'Université de Rochester.

Le docteur Leung, de 1950 à 1961, fit partie du personnel enseignant de la faculté dentaire de l'Université de Pittsburg. Il agit comme professeur et directeur du département de physiologie, professeur de recherches dentaires, directeur des cours gradués, directeur du département de recherches et de la formation des professeurs.

Le docteur Leung se rendit ensuite à l'Université de Californie, à Los Angeles, pour aider à l'organisation de la nouvelle faculté, tout en enseignant la biologie buccale et la physiologie.

Le docteur Leung est "fellow" de l'American College of Dentists et membre de l'Association américaine pour l'avancement des sciences. Il fut consultant au Bureau national d'examen dentaire des Etats-Unis et aux Instituts nationaux de santé.

Un comité, sous la présidence du doyen de la faculté de médecine, nommé pour choisir ce doyen, a considéré une longue liste de candidats avant de choisir le docteur Leung. Le docteur Macdonald a déclaré que le comité avait cherché un candidat dans le monde entier et que ce comité avait unanimement recommandé le docteur Leung.

taire international tenu à Cologne, Allemagne, du 7 au 14 juillet. Environ 150 Canadiens s'étaient inscrits à ce congrès, qui a lieu tous les cinq ans, sous les auspices de la Fédération dentaire internationale.

Ce congrès coïncidait avec la célébration du cinquantenaire de la fondation de la Fédération.

Les délégués officiels de l'Association dentaire canadienne étaient les docteurs James P. Coupland, d'Ottawa, Harvey W. Reid, de Toronto et Don W. Gullett, qui est secrétaire de l'A.D.C. et membre du conseil de la F.D.I.

L'exposition dentaire internationale avait 418 kiosques de 19 pays différents. Cette exposition, qui a été inaugurée par le Ministre de la santé de l'Allemagne fédérale, a, dit-on, attiré 51,000 visiteurs.

L'assemblée générale de la F.D.I. a discuté plusieurs questions, entr'autres le problème de s'assurer et de fournir les effectifs dont a besoin la chirurgie dentaire et les effets du Marché commun sur l'exercice dentaire.

Des prix internationaux ont été décernés au cours de la séance inaugurale. Le prix international Miller a été décerné, à titre posthume, au docteur H. Trendley, doyen et expert de la première heure en fluoration.

L'assemblée a réélu comme président, J. Délibéros, de France, comme vice-présidents, L. M. Ennis, des Etats-Unis, K. Gard, de Norvège, P. O. Pedersen, du Danemark et W. Stewart, du Royaume-Uni et, comme président-élu, E. Muller, d'Allemagne.

Plusieurs des conférences présentées durant le congrès seront publiées plus tard dans le Journal dentaire international. Ces textes sont disponibles automatiquement aux dentistes qui sont membres supporteurs de la F.D.I. (Les dentistes canadiens qui désirent des renseignements sur la façon de devenir membre supporteur doivent écrire au trésorier national pour le Canada, Don W. Gullett, 234 St. George, Toronto 5).

ETATS-UNIS

Les assurances dentaires font du progrès. — Les assurances dentaires sont à la veille d'un progrès extraordinaire! Un porte-parole de l'Association dentaire américaine a déclaré que des plans de pré-paiements du genre Blue Shield seront disponibles, l'an prochain, aux citoyens de vingt Etats.

Quatre systèmes d'assurances fonctionnent déjà et seize sont en voie d'organisation. Ils couvriront les régions où 66 pour cent des dentistes du pays exercent (Tiré du *Medical Economics*, le 2 juillet 1962, p. 106.)

Chronique internationale

FEDERATION DENTAIRE INTERNATIONALE

Canadiens au congrès de la Fédération dentaire internationale. — Plus de 11,000 personnes ont assisté au treizième congrès den-

Le Corps dentaire royal canadien

LE DIRECTEUR GENERAL PRESENTE L'EMBLEME DU CORPS DENTAIRE

L'Ecole du Corps dentaire de Camp Borden a organisé une cérémonie pour commémorer le 50e anniversaire de la fondation du Corps dentaire de la Marine américaine.

Le brigadier K. M. Baird, O.B.E., C.D., directeur général des Services dentaires pour les forces armées du Canada, a présenté une plaque du Corps dentaire royal canadien au commander Richard R. Troxell, instructeur de la Marine américaine affecté à l'Ecole du Corps dentaire au Camp Borden en vertu d'un programme d'échange d'officiers, en guise de "cadeau de fête" et "en témoignage de la grande estime mutuelle que les deux Corps ont l'un pour l'autre".

Le Corps dentaire royal canadien et le Corps dentaire de la Marine américaine, qui travaillent en étroite collaboration depuis nombre d'années, ne manquent jamais l'occasion d'échanger leurs points de vue sur les différents aspects de la dentisterie dans les forces armées.

Au cours de cette cérémonie, le commander Troxell, qui se trouve à être le premier instructeur étranger à servir à l'école en vertu du programme d'échange d'officiers, a montré un film documentaire sur le Corps dentaire de la Marine américaine.

NOUVELLES DE LA DIRECTION DES SERVICES DENTAIRE

Le directeur général des Services dentaires reçoit un parchemin de l'Ordre de Saint-Jean de Jérusalem. — Le brigadier K. M. Baird, directeur général des Services dentaires pour les forces armées du Canada, vient de recevoir un parchemin par lequel le Prieur de l'Ordre de Saint-Jean de Jérusalem lui transmet, pour l'année 1962, un témoignage d'estime et de remerciements, vu que dans le Corps dentaire plus de 90% des militaires de tous grades ont obtenu un certificat de compétence en premiers soins ou un diplôme supérieur. Cette réalisation, qui constitue certainement une contribution importante à l'efficacité générale des forces armées, ne manquera pas d'avoir une portée considérable sur le rôle que le Corps dentaire est appelé à jouer dans les opérations de survie nationale.

Le brigadier Baird en tournée dans l'Ouest. — Vers la fin de mai, le brigadier K. M. Baird,

directeur général des Services dentaires, a fait l'inspection de la 14e Compagnie dentaire, dont le quartier général se trouve à Winnipeg. Accompagné du lieutenant-col. R. B. Jackson, commandant de la 14e Compagnie, il a visité des cliniques dans la région de Winnipeg. Puis il s'est rendu à Vancouver, où il a assisté à la réunion du Conseil des Gouverneurs de l'Association dentaire canadienne, de même qu'au congrès de cette association. Après le congrès, il a fait l'inspection de la 11e Compagnie dentaire à Vancouver, Victoria, Calgary et Edmonton. Pendant cette partie de son voyage, il était accompagné du commandant de la 11e Compagnie, le colonel B. P. Kearny.

DISTINGUE VISITEUR DE L'ARMEE AMERICAINE A L'ECOLE DU CORPS DENTAIRE

Le colonel Clare T. Budge, directeur du département de la science dentaire à la Medical Field Service School de l'Armée américaine, a visité l'Ecole du Corps dentaire au cours du mois de juin.

Spécialiste éminent et militaire distingué, le colonel Budge est bien connu pour sa grande compétence en chirurgie buccale et il a occupé plusieurs postes importants en cette qualité aux Etats-Unis.

Pendant sa visite à l'Ecole, le colonel Budge a présenté au commandant, le colonel C. E. Purdy, une réplique de la plaque de la Medical Field Service School.

OFFICIER DENTISTE A LA TETE D'UNE EQUIPE DE CHAMPIONS

Au cours d'une cérémonie qui a eu lieu au champ de tir Connaught d'Ottawa le 18 août, le lieutenant-général G. Walsh, C.B.E., D.S.O., C.D., chef d'état-major général, a présenté le trophée Letson au major J. C. Brick de la Direction des services dentaires. Ce trophée est offert chaque année à l'équipe qui remporte le championnat de tir au fusil de l'Armée canadienne. Le major Brick a accepté le trophée au nom de l'équipe du Quartier général de l'Armée, dont il est le capitaine et qui représentera l'Armée canadienne à Bisley, l'été prochain.

OFFICIERS DENTISTES AU CONGRES DE L'ASSOCIATION DENTAIRE CANADIENNE

Les officiers dont les noms suivent ont assisté au congrès de l'Association dentaire cana-

dienne qui a eu lieu à Vancouver du 3 au 6 juin: Brigadier K. M. Baird — Direction; Colonel B. P. Kearny — Edmonton; Lieut-col. R. E. Brown — Esquimalt; Major D. H. Protheroe — Direction; Major W. H. Carter — Cold Lake; Major R. J. K. Pyne — Comox; Major M. P. Quinn — Vancouver; Capitaine J. O. Bowman — Sea Island; Capitaine D. G. Gardner — Esquimalt; Capitaine L. C. Gray — Vancouver; et Capitaine M. Petryk — Calgary.

Au cours du congrès, la 61e Unité dentaire (Milice), commandée par le lieut-col. P. L. Rondeau, a offert un coquetel au théâtre Queen Elizabeth.

AFFECTATIONS D'OFFICIERS SUPERIEURS

Les lieutenants-colonels et majors suivants viennent d'avoir une nouvelle affectation:

Le lieut-col. R. E. Brown, qui était au H.M.C.S. Naden, à Esquimalt, a été affecté à l'Ecole du Corps dentaire, au Camp Borden.

Le lieut-col. S. G. Bagnall, qui était à l'Ecole du Corps dentaire, au Camp Borden, a été affecté à la Direction des services dentaires, à Ottawa.

Le lieut-col. W. W. Anglin, qui se trouvait à Camp Petawawa, a été affecté à la Base aérienne de l'A.R.C., à Saint-Jean.

Le lieut-col. G. MacDougall, qui était à l'Ecole du Corps dentaire au Camp Borden, a été affecté au H.M.C.S. Naden, à Esquimalt.

Le major J. C. Brick, qui était à la Direction des services dentaires à Ottawa, a été affecté à la Base aérienne de l'A.R.C., à Uplands.

Le major D. H. Protheroe, qui se trouvait à la Direction des services dentaires à Ottawa, a été affecté à l'Ecole du Corps dentaire, au Camp Borden.

Le major H. R. Kettys, qui était au quartier général de la garnison à Calgary, a été affecté à la Direction des services dentaires, à Ottawa.

Le major S. W. Muller, qui était à la Base aérienne de l'A.R.C. à Winnipeg, a été affecté au quartier général du Réseau routier du Nord-Ouest, à Whitehorse.

Le major P. S. Sills, qui était à la Base aérienne de l'A.R.C. à Uplands, a été affecté à l'Ecole du Corps dentaire, au Camp Borden.

Le major J. W. Jolly, qui était à Fort-Churchill, a été affecté au quartier général de la garnison, à Calgary.

Le major D. H. Skinner, qui était avec la 4e Compagnie dentaire de campagne en Allemagne, a été affecté au camp de Petawawa.

Le major E. M. C. Franklin, qui se trouvait avec la 35e Unité dentaire de campagne en

France, a été affecté à la Base aérienne de l'A.R.C., à Centralia.

Le major I. W. Susser, qui se trouvait à la Base aérienne de l'A.R.C. à Greenwood, a été affecté à la 35e Unité dentaire de campagne, en France.

Le major J. V. P. Chatwin, qui était à l'Hôpital des forces armées du Canada à Kingston, a été affecté à la 4e Compagnie dentaire de campagne, en Allemagne.

Le major W. K. Dickie, qui se trouvait au quartier général du Réseau routier du Nord-Ouest à Whitehorse, a été affecté à l'Hôpital des forces armées du Canada, à Kingston.

Le major J. L. Craig, qui était à l'Ecole du Corps dentaire au Camp Borden, a été affecté à la clinique dentaire du quartier général de l'Aviation, à Ottawa.

Le major P. E. Fafard, qui se trouvait à la Base aérienne de l'A.R.C. à Centralia, a été affecté à l'établissement de Fort-Churchill.

ECHANGE D'OFFICIERS

Le major A. L. Kelland, du quartier général de la région militaire du Centre à Oakville, vient d'être affecté à la Force d'urgence des Nations Unies au Moyen-Orient, en qualité de commandant du détachement du Corps dentaire. Il remplace le major E. J. C. Small, qui retourne à Oakville, où il a servi pendant quelque temps avant de se rendre outre-mer.

RETOUR A LA VIE CIVILE

Les officiers dentistes dont les noms suivent, tous titulaires d'un brevet à court terme, ont obtenu leur libération du Corps dentaire: capitaine A. P. Menzies, capitaine H. F. MacKay, et capitaine J. O. Bowman.

Hygiène publique

UN RAPPORT DU MINISTERE DE LA SANTE CONFIRME LA VALEUR DU FLUOR

Le comité chargé de l'étude entreprise à Brantford sur la fluoration vient, dans son plus récent rapport, de confirmer la valeur de l'addition de fluor à l'eau de consommation.

Les dents des adolescents qu'on a examinées à Brantford montrent beaucoup moins de

carie que les groupes-témoins de Sarnia. Il en est de même à Stratford, où l'eau est fluorée naturellement par des dépôts de fluor souterrains.

Ce rapport a été préparé par le docteur H. K. Brown, consultant dentaire au Ministère de la santé nationale et du bien-être social. Voici le résumé du rapport:

Les expériences qui durent depuis quelques quinze ans et demi à Brantford montrent les différences qui existent dans le nombre moyen des caries des enfants de 14 et 15 ans de Sarnia (sans fluor, de Brantford (fluor ajouté à l'eau) et Stratford (fluor présent naturellement dans l'eau).

Un peu plus de 1% des enfants de Sarnia ont des dents permanentes indemnes de carie et 16%, à Stratford et à Brantford.

Cent (100) enfants de Sarnia ont perdu 82 dents permanentes; cent (100) enfants de Brantford ont perdu 30 dents permanentes; à Stratford, cent (100) enfants ont perdu 25 dents permanentes.

Les enfants de Sarnia ont en moyenne 8 dents permanentes, chacun, atteintes de carie; les enfants de Brantford, moins de 4 et ceux de Stratford, à peu près 3.

Les enfants de Sarnia, dans une proportion de 50%, ont les incisives centrales supérieures indemnes de carie; ceux de Brantford, 87%; ceux de Stratford, 89%.

Ces révélations appuient celles constatées au cours de nos relevés faits, il y a quelques années, chez les enfants nés à Sarnia, Brantford et Stratford; elles montrent les effets bienfaisants sur les dents d'environ une partie de fluor dans un million de parties d'eau, soit que le fluor y soit naturellement présent, soit que le fluor y soit ajouté.

DES RECHERCHES ENTREPRISES SUR LA FLUORATION EN ANGLETERRE SUPPORTENT CETTE MESURE

Des recherches entreprises depuis cinq ans, en Angleterre, sur la fluoration de l'eau ont montré que cette mesure diminue de 50% l'incidence de la carie chez les enfants qui ont passé toute leur vie dans les régions où ont eu lieu ces expériences. Les Comités consultatifs permanents de la dentisterie et de la

médecine recommandent l'addition de fluor à l'eau de consommation.

Ces expériences ont été faites durant cinq ans dans trois régions, Watford, un secteur de Anglesey et Kilmarnock, où la teneur de l'eau en fluor a été ajustée à une partie par un million.

Le nombre moyen des dents affectées par la carie a diminué de plus de la moitié chez les enfants qui ont consommé cette eau toute leur vie. Presque deux fois plus d'enfants qu'autrefois ont des dents complètement saines.

Dans les trois régions mises ensemble, le nombre moyen de dents cariées, absentes ou obturées fut, à l'âge de trois ans, de 66 pour cent moindre qu'avant la fluoration.

Ce chiffre était abaissé de 57% pour cent, à quatre ans, et de 50 pour cent, à l'âge de cinq ans. A l'âge de trois ans, la proportion des enfants qui n'avaient pas de carie a monté de 32 à 60 pour cent, à quatre ans, de 22 à 42 pour cent et, à l'âge de cinq ans, de 8 à 31 pour cent.

Le rapport parle d'un "programme de surveillance médicale" institué aux trois endroits pour déceler tout inconvénient produit par la fluoration.

Le comité spécial de surveillance, qui a vérifié la sécurité de cette mesure, a rapporté qu'elle n'a aucun effet nocif.

Un organisme, l'Association nationale pour l'eau pure, dirige la lutte contre la fluoration. Les associations médicales et dentaires d'Angleterre préconisent cette mesure.

CONDAMNATION DE ROYAL LEE

Royal Lee, président de la Vitamin Products Company, de Milwaukee, États-Unis, a été condamné par une cour fédérale à un an de prison avec sursis et à trois mois de probation. La Division des aliments et drogues du gouvernement américain a déclaré qu'il s'était rendu coupable d'avoir vendu, grâce à une réclame frauduleuse, au-delà de 115 substances alimentaires susceptibles de guérir plus de 500 différentes maladies.

Lee avait aussi combattu, par sa Fondation des recherches alimentaires, des mesures de santé reconnues, comme la fluoration, la pasteurisation du lait et diverses vaccinations.

La Bibliothèque de l'A.D.C. • La bibliothèque de l'Association dentaire canadienne dispose de milliers de volumes traitant de sciences dentaires et médicales; elle met en outre à la disposition des dentistes de toutes les parties du Canada (par la poste) des périodiques et d'autres imprimés de toutes sortes. Les dons faits au Fonds de la bibliothèque sont déductibles de l'impôt sur le revenu.

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Control of Postextraction Bacteraemias

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SAWASDI, M.D. and MARIA PLATONOW, M.D., Montreal, P. Que.

The treatment of subacute bacterial endocarditis (S.B.E.) has vastly improved in the past few years; but although the patient may experience a bacterial cure, the residual damage to the heart valves often results in death due to heart failure. For this reason prophylactic antibiotic therapy offers the best protection to an individual with defective or dam-

aged heart valves who may be threatened by infection.

Transient bacteraemias may occur from a variety of conditions. It has been shown by Winslow and Kobernik¹ that bacteraemias can occur following a vigorous prophylaxis in an unclean mouth. Eisenbud² has shown that endodontic treatment has also been responsible for bacterial invasion of the blood stream resulting in S.B.E. Though it has been well known that tooth extraction can be responsible for this condition, it has just recently been shown that the same can occur during other minor procedures car-

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†Bacteriologist-in-chief, Montreal General Hospital. This study was supported by Charles E. Frost & Co., Montreal.

ried out in the unhealthy mouth.³ It is important to note that the type of dental procedure is not so much an influencing factor as is the condition of the surrounding structures.¹ There is no general agreement that antibiotics should be administered prophylactically for all minor infections. From the above statements however, it can be seen that it is of paramount importance to administer antibiotics for periodontal, endodontic and surgical procedures, in the presence of oral pathology and with a history of valvular heart disease. In the face of this, it is obvious that a careful case history of all dental patients should be taken before any traumatic procedures are attempted. If there is a suspicion of the foregoing conditions, it is generally agreed that penicillin should be administered prophylactically for the patient's protection.⁴ This is in consideration of the fact that following manipulation of the oral tissues, the blood stream is invaded by streptococci of the viridans group (*Str. salivarius*). This is the organism most often responsible for S.B.E. and is a common inhabitant of the oral cavity.

In the following study the results of the administration of two forms of oral penicillin the "delayed absorption"* and the "fast absorption"† types were investigated. It was also of importance to consider the proper dosage level to give the patient maximum protection.

MATERIALS AND METHODS

Fifty patients acted as controls and seventy-five patients, divided into three groups, received the medication. The patients selected in both control and treated series had some evidence of dental pathology ranging from simple pulpal exposure to that of extensive stomatitis. Traumatic procedures during surgery were always kept at a minimum due to the fact that many of the treated cases

had a history of rheumatic heart disease. Twenty ml. of blood was taken from each patient immediately after completion of the oral surgery. Ten ml. of the sample was incubated at 37° Centigrade aerobically in brain heart infusion broth and the remainder incubated at the same temperature anaerobically in trypticase soy broth. The cultures were held for twenty-one days before a negative result was accepted. When growth occurred, appropriate methods were used to identify positively the organisms present.

RESULTS

The results are shown in Tables 1-4.

Control Group.—Fifty patients were selected from the emergency area of the Montreal General Hospital Dental Clinic. All required one or more extractions due to acute or subacute infection. The acute cases usually resolved into the subacute stage within two to five days. In this group there were eighteen positive blood cultures following extraction (Table 1). In addition, seven patients with impacted third molars were surgically treated in the main operating room of the hospital. They were essentially free from any periodontal disease and in spite of more traumatic procedures, no bacteraemias occurred. This was possibly due to good oral hygiene. (These cases were not included among the fifty controls).

Treated Groups.—Twenty-five patients with oral conditions comparable to those of the control group were administered a "delayed absorption" type of penicillin. Each patient was given one million units of penicillin in two divided doses per day, for two to five days; and 500,000 units one hour prior to extraction. Of this group six patients had positive blood cultures (Table 2).

*Potassium penicillin-G, *Falopen*, Frosst.

†Phenoxy-methyl-penicillin, *P.V.F.*, Frosst.

It was considered at this time that the dosage level of penicillin was not adequate. On a purely empirical basis the amount was therefore doubled. Twenty-five patients were administered two million units of "delayed absorption" penicillin per day in two divided doses for at least two days, and one million units just

prior to surgery. In this group bacteraemia occurred in two patients (Table 3).

A third group of twenty-five patients were administered a "fast absorption" type of penicillin at the same dosage level and time intervals as the second treated group. In this series bacteraemia also occurred in two patients (Table 4).

TABLE 1 Organisms isolated from positive blood cultures; control group.

Patient	Organisms
1.	<i>Bacteroides melaninogenicus</i> <i>Peptostreptococcus evolutus</i>
2.	<i>Bacteroides melaninogenicus</i> <i>Peptostreptococcus evolutus</i> <i>Fusobacterium fusiforme</i>
3.	<i>Corynebacterium pseudodiphtheriticum</i> <i>Peptostreptococcus anaerobius</i>
4.	<i>Veillonella alkalescens</i> <i>Peptostreptococcus anaerobius</i>
5.	<i>Peptostreptococcus evolutus</i>
6.	<i>Peptostreptococcus evolutus</i>
7.	<i>Bacteroides melaninogenicus</i> <i>Peptostreptococcus anaerobius</i> <i>Fusobacterium fusiforme</i>
8.	<i>Streptococcus salivarius</i> <i>Corynebacterium acnes</i>
9.	<i>Streptococcus salivarius</i>
10.	<i>Bacteroides melaninogenicus</i> <i>Peptostreptococcus anaerobius</i> <i>Fusobacterium fusiforme</i>
11.	<i>Veillonella alkalescens</i> <i>Corynebacterium acnes</i> <i>Peptostreptococcus evolutus</i>
12.	<i>Veillonella alkalescens</i>
13.	<i>Veillonella alkalescens</i> <i>Bacteroides melaninogenicus</i> <i>Peptostreptococcus anaerobius</i>
14.	<i>Peptostreptococcus evolutus</i> <i>Veillonella alkalescens</i> <i>Bacteroides melaninogenicus</i> <i>Fusobacterium fusiforme</i>
15.	<i>Streptococcus salivarius</i>
16.	<i>Peptostreptococcus anaerobius</i>
17.	<i>Streptococcus salivarius</i> <i>Veillonella alkalescens</i> <i>Bacteroides melaninogenicus</i> <i>Corynebacterium acnes</i>
18.	<i>Streptococcus salivarius</i>

TABLE 2 Organisms isolated from positive blood cultures; treated group receiving 1,000,000 I.U. delayed absorption penicillin in two divided doses per day, and 500,000 I.U. one hour prior to extraction.

Patient	Organism
1.	<i>Peptostreptococcus anaerobius</i>
2.	<i>Streptococcus salivarius</i>
3.	<i>Streptococcus salivarius</i>
4.	<i>Streptococcus salivarius</i>
5.	<i>Streptococcus salivarius</i>
6.	<i>Streptococcus salivarius</i>

TABLE 3 Organisms isolated from positive blood cultures; treated group receiving 2,000,000 I.U. delayed absorption penicillin in two divided doses per day, and 1,000,000 I.U. prior to extraction.

Patient	Organism
1.	<i>Aerobacter aerogenes</i>
2.	<i>Peptostreptococcus evolutus</i>

TABLE 4 Organisms isolated from positive blood cultures; treated group receiving 2,000,000 I.U. fast absorption penicillin in two divided doses per day, and 1,000,000 I.U. prior to extraction.

Patient	Organism
1.	<i>Neisseria perflava</i>
2.	<i>Peptostreptococcus evolutus</i>

DISCUSSION

The bacteriological finding in the control series is interesting in that the positive cultures consisted of a mixture of organisms which were mainly anaerobic. Only in five cases were streptococci of the viridans group isolated. Usually the greatest concern is for the presence of this species. However, the occurrence of mixtures of other organisms cannot be disregarded. In seven of these cases, *Bacteroides* species were isolated. It has recently been reported by Tynes and Frommeyer⁵ that twenty-five cases of septicaemia, due to this organism, had occurred as a result of infection from various parts of the body.

The anaerobes which were isolated are commonly found in the mouth, particularly in dental plaques and on the enamel surfaces of neglected teeth. Outpatients attending the dental clinic have, as a rule, poor oral hygiene. They would be expected to have large numbers of these organisms associated with the periodontal tissues, whereas private patients receiving regular dental care would not harbour as many. Since cultures taken from private patients in the surgical operating room were all sterile, it would seem that it is the condition of the periodontal tissue and not that of the tooth which predisposes a patient to bacterial invasion of the blood stream during oral surgery.

In the treated group 2, the mixtures of anaerobes were not found, but streptococci of the viridans group were isolated in pure culture from five patients and a pure culture of anaerobic streptococci (*Pept. anaerobius*) from one.

The prophylactic dose of one million units daily of "delayed absorption" type penicillin reduced the number of transient bacteraemias in patients undergoing dental surgery (eighteen positive cultures in controls, six in treated patients). However, its effect was chiefly on the anaerobic organisms which are not commonly encountered in S.B.E.

The fact that five of the patients re-

ceiving penicillin produced pure cultures of streptococci of the viridans group, which were found to be sensitive by "in vitro" tests, is rather alarming as this is the organism the antibiotic was intended to suppress.

In the treated group 3, the larger dose completely suppressed the growth of streptococci of the viridans group. Of the two positive cultures obtained in this series, *A. aerogenes* is resistant to penicillin and therefore the treatment would not be expected to have any effect on this organism. Microaerophilic streptococci (*Pept. evolutus*) on the other hand are penicillin-sensitive and their appearance cannot be explained on bacteriological grounds.

Considering the results, it appears that prolonged acting penicillin is as effective as the more rapidly absorbed penicillin at the prescribed dosage level and for the period of time recommended.

SUMMARY

It has been shown that during surgical trauma which accompanies tooth extraction, transient bacteraemias can occur with organisms that would be deleterious to the patient with valvular heart disease. Patients receiving minimal therapeutic doses of penicillin were not completely protected from blood stream invasion with streptococci of the viridans group. Higher doses of penicillin significantly reduced the incidence. The form of penicillin did not appear to be significant.

The results have been discussed.

RÉSUMÉ

Le traumatisme chirurgical qui accompagne tout extraction peut déclencher une bactériémie passagère, susceptible de causer des ennuis à un patient qui souffre d'une lésion valvulaire. On s'entend pour prescrire à un patient qui présente des doutes à ce sujet une dose prophylactique

de pénicilline afin d'éliminer les effets de cette bactériémie; car le torrent sanguin, à la suite de traumatisme des tissus de la cavité buccale, recueille des streptococques du groupe viridans. Ces micro-organismes se trouvent généralement dans la bouche et ils sont les plus souvent responsables de l'endocardite sub-aiguë.

Cet article rapporte les résultats de l'administration per os de deux variétés de pénicilline: une à action lente et l'autre à action rapide; il traite aussi du dosage propre à assurer la protection idéale au patient. Cinquante patients servirent de témoins et soixante-quinze, divisés en trois groupes, reçurent une médication. Les patients des deux catégories souffraient de désordres dentaires depuis des expositions de pulpe jusqu'à des stomatites considérables. Vingt-cinq patients de la série traitée ont reçu 1,000,000 d'unités de pénicilline à action lente, à raison de deux doses par jour, durant une période de temps variant de 2 à 5 jours et 50,000 unités, une heure avant l'extraction. Vingt-cinq patients de la seconde série de ceux qui ont été traités ont reçu 2,000,000 d'unités de pénicilline à action lente par jour, en deux doses

séparées, pour au moins deux jours, et 1,000,000 d'unités immédiatement avant l'extraction. Vingt-cinq patients de la troisième série du groupe traité ont reçu de la pénicilline à action rapide à la même dose que ceux de la seconde série.

L'expérience a montré que les patients qui ont reçu la plus petite dose thérapeutique de pénicilline n'étaient pas complètement prémunis contre l'invasion dans le sang de streptococques viridans.

Plus la dose était considérable, plus l'immunité était grande. Le genre de pénicilline ne semble pas influencer les résultats.

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Biological Approach to Dental Practice: Periodontics

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One of the most significant events that has taken place in dentistry within recent years is the Report of the Commission on the Survey of Dentistry in the

United States.¹ Since publication, the report has been received and reviewed with acclaim by most of the leading dental journals in the English-speaking world. One part of the report has been commented upon particularly on more than one occasion. This part comes from the section on dental education. It states the

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views of most of the younger generation who are now teaching periodontics in this and other countries. Referring to preventive dentistry the Commission:

"suggest close study of the philosophy adopted during the past fifteen to twenty years by an ever increasing group of dentists trained in periodontics, who have found an extremely satisfying way of dental practice. Although not specialists in periodontics in the strict sense, these dentists combine advanced knowledge of the treatment of periodontal disease with skill in restorative procedures to offer the finest type of oral health services to their patients. The Commission by no means proposes that every dentist specialize in periodontics; it simply cites the dentists who emphasize periodontics in their practices as an example of a thoughtful approach to dentistry which could be emulated by most dentists.

"Periodontics concerns itself basically with inflammatory and degenerative processes attacking the tissue and bone surrounding and supporting the teeth. Increasingly, the dentists emphasizing periodontics are combining the basic biological sciences, oral diagnosis, the treatment of soft tissue lesions, the correction of unbalanced occlusion, and the proper restoration of decayed teeth. This combination of knowledge and skills has broken the departmentalization which has confined dental education from its beginning.

"The concept of modern periodontics, if adopted by the schools, would make most parts of restorative dentistry far more meaningful to students. If major emphasis were placed on the health of the supporting structures of the teeth and the many influences that affect it, then the preparation of a cavity, the choice of filling material, the design of a crown, a bridge, or a partial denture, would no longer be a major consideration in itself. Since each contributes to the prevention of periodontal disease, the importance of good technique becomes more meaningful."

Within this framework, correct diagnosis and treatment planning assume a new significance. Diagnosis depends on the correct interpretation of information derived from the case history and the clinical examination. It is to these aspects that this paper is devoted.

HISTORY TAKING—A STEP TO DIAGNOSIS

To arrive at a diagnosis, two steps must always be performed. First, a history must be taken and secondly, a clinical examination must be made. Sometimes a third step may be required to confirm the clinical diagnosis, and that is the use of special examinations such as radiology, blood examination, biopsy, etc., I wish to concentrate on the first step, as this area is probably the most neglected in dental practice and teaching.

Diagnosis is the discovery and interpretation of symptoms and signs. This implies much more than merely attaching a name to a disease, and here the writer is more concerned about how one sets about the problem of arriving at a diagnosis than finding the right answer to the puzzle.

A symptom is a departure from the normal, experienced by the patient. The only way to discover symptoms is to ask the patient what changes he has noticed. This is called "taking a history". If the history is going to be really enlightening to the practitioner, he is the only one who can take it. This requires a systematic plan of questioning and a wide knowledge of dentistry and patients so that the maximum amount of information can be gathered together and arranged in an orderly sequence for subsequent interpretation.

Personal History (P.H.).—Details of the patient's personal history, including name, age, sex, marital status, address, occupation and nationality, are often recorded by the dental assistant. It is the practitioner's introduction to the patient, and gives him the opportunity to get to know the patient as a person. From the personal history one can deduce the following additional information: "Does the patient look as old or as young as he says he is?" "Does he look healthy or run-down?" "Has his occupation any possible dental or medical hazard, or will it influence future dental treatment?" "Would his nationality or place of birth influence

either his dental or medical health?" One can give many examples to show how helpful and illuminating this information can be. For instance, seamen find it difficult to keep appointments; a flautist will be more concerned with keeping his anterior teeth than a pianist or a violinist. Persons from Pakistan and India have graver periodontal diseases than mid-Europeans, who usually have more gold crowns and non-vital teeth than Anglo-Saxons. Winnipeg children should have less carious teeth than those of Adelaide. All this is good and valuable information that needs a skilled and trained mind to interpret it.

Chief Complaint (C.O.).—Here we record the patient's chief symptom elicited from the following questions: "Why did the patient come to see you?" "What is it that is worrying him?" The opening question must be carefully worded in order to avoid a facetious reply. "What is troubling you Mrs. Smith?" is simple, direct and requires a clear statement from the patient. If there are multiple apparently unrelated complaints, they are recorded in the order of seriousness, and later investigated individually. The patient should be dissuaded from using semi-scientific jargon, such as 'neuralgia'. If the patient has 'pain', it is recorded as such.

History of the Present Illness (H.P.I.).—This establishes the details of the illness which has brought the patient to the office. The following questions can be posed: "Where precisely is the trouble?" "When did it start?" "Has it ever got any better or worse?" "Has any home treatment helped?" "Are there any other symptoms associated with the present trouble?" The extent and type of questions that will be put depend upon the complaint. Some diseases like acute herpetic gingivo-stomatitis have very short histories; others like chronic marginal gingivitis have very little history at all, while some like post-menopausal gingi-

vosis have quite long and involved histories. The skilled practitioner will apply his whole knowledge and experience to the problem. He will sort out what is important and significant from that which is irrelevant. Knowledge and experience are obviously needed if one is to gain the maximum information from the history of the complaint.

Previous Dental History (P.H.D.).—Information concerning the patient's previous dental history is recorded. If he has received treatment for this particular complaint before, it is important to know what that treatment comprised and how successful or otherwise the patient found the treatment. Moreover, one can ascertain the patient's impression regarding previous dental experiences, good, bad, or indifferent. It is not the practitioner's job to comment on the patient's past experience, but he should determine how the patient has reacted to it.

Medical History (M.H.).—The medical history should be pursued as far as it is relevant to the oral health. This can become highly involved or can be dealt with fairly rapidly depending upon the answers one receives to such questions as: "How is your general health?" "Have you ever been in hospital?" "Are you under medical treatment or taking any drugs at the moment?" "What childhood illnesses have you had?" The amount of information one obtains and how much it means will again depend upon one's basic medical and surgical knowledge. With the advance of modern medicine and dentistry, we must be constantly aware of new problems which are appearing daily. For example, patients with coronary disease now often take anti-coagulant drugs. If the practitioner desires further medical information the family physician can be contacted or a medical confrere can be asked to see the patient. Whatever action one takes will depend on the skilled and knowledgeable interpretation of what the patient discloses.

P.H. (PERSONAL HISTORY)	MRS. B. SHORT, AGED 23. 180 CARDIGAN PLACE. MARRIED. HOUSEWIFE.
C.O. (COMPLAINING OF.)	PAINFUL AND BLEEDING GUMS FOR LAST TWO DAYS.
H.P.C. (HISTORY OF PRESENT CONDITION.)	MOUTH SUDDENLY BECAME SORE TWO DAYS AGO. NOTICED BLEEDING ON PILLOW. HUSBAND TOLD HER SHE HAD BAD BREATH. FEELS A LITTLE OFF COLOR AND SHAKY. DIFFICULT TO EAT AND A BAD TOOTH IN HER MOUTH. TOO TENDER TO USE A TOOTHBRUSH, BUT SALINE MOUTH WASHES RELIEVED IT SLIGHTLY. NOT IMPROVING.
P.D.H. (PAST DENTAL HISTORY.)	VISITS DENTIST REGULARLY FOR RESTORATIONS. HASN'T HAD A SCALING FOR 3 YEARS. NEVER HAD ANYTHING LIKE THIS BEFORE. NO DENTURE. WISDOM TEETH EXTRACTED THREE YEARS AGO WITHOUT ANY COMPLICATIONS
M.H. (MEDICAL HISTORY.)	HEALTHY. TWO CHILDREN; BOY AGED 4 AND GIRL 2 YEARS. NO TROUBLE. MENSTRUATES REGULARLY EVERY 28 DAYS. NO DYSMENORRHOEA. PLAYED TENNIS REGULARLY UNTIL CHILDREN CAME. USUAL CHILDHOOD ILLNESSES. NO RHEUMATIC FEVER. NO ABNORMAL BLEEDING. FEW COLDS OR COUGHS. NO OPERATIONS. ONLY TIME IN HOSPITAL FOR BIRTH OF CHILDREN.
F.H. (FAMILY HISTORY.)	FATHER AND MOTHER ALIVE AND WELL. NEITHER HAVE BEEN IN HOSPITAL OR HAD ANY OPERATIONS.

FIGURE 1 Specimen case history. This shows the essential plan of a case history and the type of information that is recorded. (After Blake and Trott: *Periodontology*; Butterworths).

Family History (F.H.).—The existence of familial and hereditary diseases should be recorded. Our knowledge of the hereditary nature of disease is far from complete, and more knowledge is being added every day to this field. Besides finding out whether any blood relatives have had similar problems to that of the patient, it is also necessary to establish the family background in terms of general and oral health. One can often learn of the occurrence of caries and periodontal disease in the family. An example of a typical history is shown in Figure 1.

Once the case history is completed, one can proceed to the clinical examination of the patient.

The recorded results of the clinical examination provide a base line for further work. The writer records the teeth that are present, their distribution, the depths of pockets, and the mobility of the teeth (Figure 2). He then records in reasonable detail his clinical observations. It is just as important to record negative as well as positive findings. A blank sheet of paper is quite adequate for this recording (Figure 3).

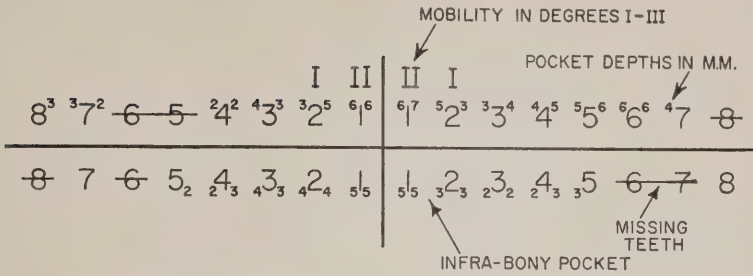


FIGURE 2 A simple method of recording teeth present and missing, pocket depths and mobility. (After Blake and Trott: Periodontology; Butterworths).

O.E.
(ON EXAMINATION.)

GENERALIZED INFLAMMATION OF
GINGIVA. LOSS OF INTERDENTAL PAPILLAE
MOST MARKED

3 + 3

ULCERATION ON INSIDE OF LOWER LIP
AND SLIGHTLY ON PALATE. TENDER
SUB-MANDIBULAR GLANDS. NO CARIES
-GOOD RESTORATIONS. NO MOBILITY.
NO TENDERNESS TO PERCUSSION.
POCKETING 6 MM.

4 5 6 7

OCCCLUSION GOOD-NO TRAUMATIC
INTERFERENCES.

PROVISIONAL DIAGNOSIS:

ACUTE ULCERATIVE GINGIVITIS.
ACUTE HERPETIC GINGIVO-STOMATITIS.P

LABORATORY INVESTIGATIONS:

1. BACTERIOLOGICAL EXAMINATION OF
SMEAR FROM ULCER SURFACE.

TREATMENT PLAN:

1. PENICILLIN-48 HOURS.
2. SCALING AND POLISHING.
3. ELECTROSURGERY ANTERIORLY.
4. GINGIVECTOMY

4 5 6 7 AREA.

5. CHECK IN 3/12 ON POST-OP. CASE.

FIGURE 3 Specimen case history. This shows the recording of the clinical examination, diagnosis and treatment plan. (After Blake and Trott: Periodontology; Butterworths).

A proper conception of basic clinical changes which may occur in the periodontal tissues and the underlying rela-

tionship between aetiological factors and resultant pathology enhance the clinician's interpretation of the history and examin-

ation findings. The following three entities—the state of the gingivae, periodontal pockets and mobility of the teeth—serve to illustrate this point.

STATE OF THE GINGIVAE

There are four broad groups of clinical reactions which the gingivae may undergo when any local irritation causes a chronic inflammatory reaction. The result of the irritation will depend upon the type and intensity of the causative agents and the host's natural resistance to such external factors. It is because of the multiple aetiological factors which can cause chronic inflammation in the gingivae and the wide variety of individual reactions which may be observed that makes the management of chronic

periodontal disease both fascinating and frustrating.

1. *Chronic Marginal Gingivitis*

The gingivae will become swollen and enlarged and show all the signs of chronic inflammation. The aetiological factors are many and varied but always local in origin. The point to remember is that the changes which take place are inflammatory in nature and that the inflammation will resolve and the tissues return to their normal healthy tone if one removes all the local irritating factors (Figure 4). The difficulty, of course, is that although one may recognize all the aetiological factors, it is not always possible to remove or correct them. In that event a balance must be struck between what is desirable and what one can achieve (Figure 5).

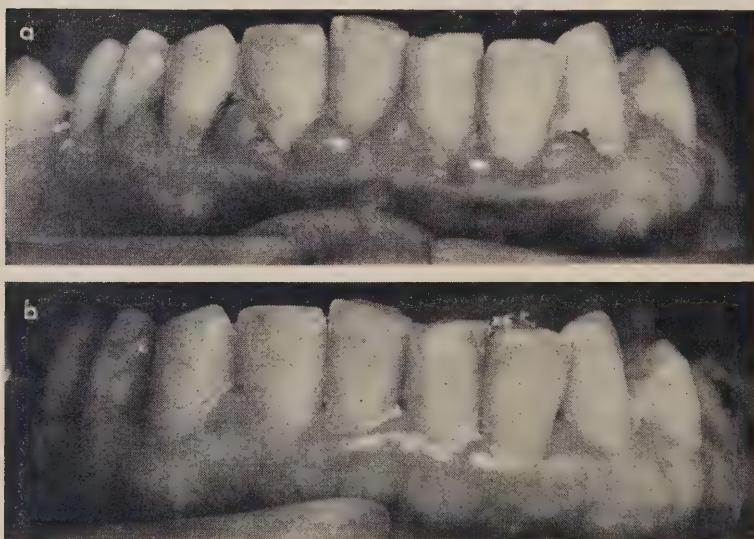


FIGURE 4 (a) Chronic marginal gingivitis showing swollen and oedematous gingivae. (b) Following scaling and curettage, the gingival inflammation has resolved. (After Blake and Trott: *Periodontology*; Butterworths).

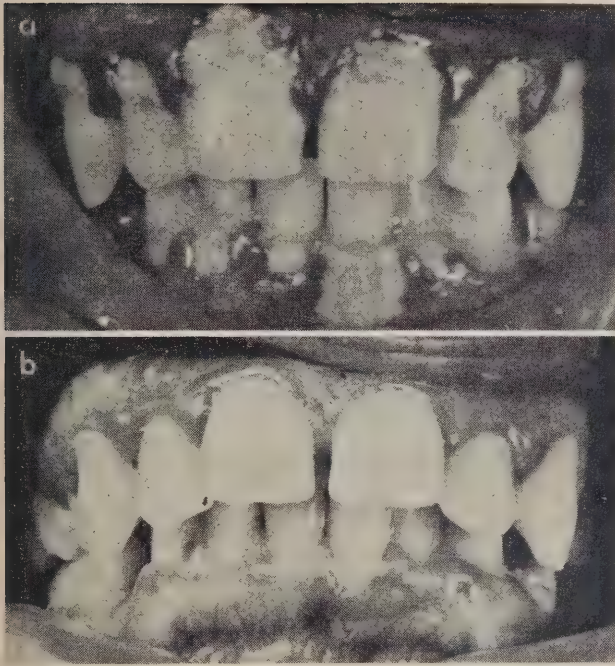


FIGURE 5 (a) Chronic marginal gingivitis due to gross materia alba and calcaeous deposits. (b) Resolution of the gingival inflammation following scaling, polishing and oral hygiene instruction. There is gingival recession around the lower incisor. This was regarded as a satisfactory clinical result and no further treatment was instituted for this recession.

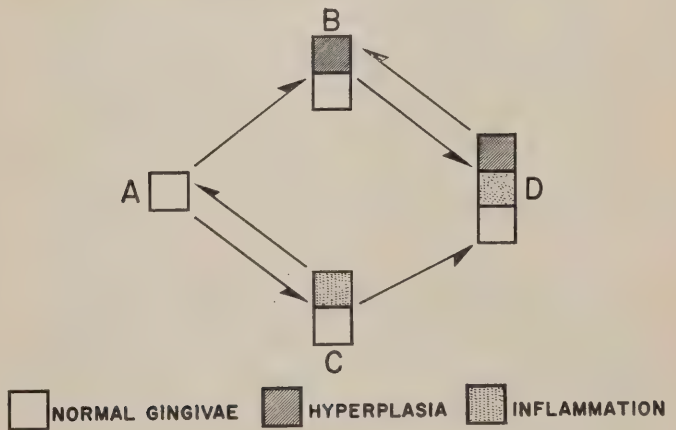


FIGURE 6 Diagrammatic representation of the pathological changes which can occur in the gingivae when they become enlarged. As the arrows indicate, some changes are reversible while others are not.

2. Chronic Hyperplastic Gingivitis

The inflammation may be so long-standing and chronic in nature that the gingivae will contain excessive amounts of fibrous connective tissue. As a gen-

eral rule the correction of the local irritating factors does not allow complete resolution to occur. Once fibrous tissue is formed in excessive amounts like this, it will not just disappear if the irritants causing it are removed (Figure 6). There

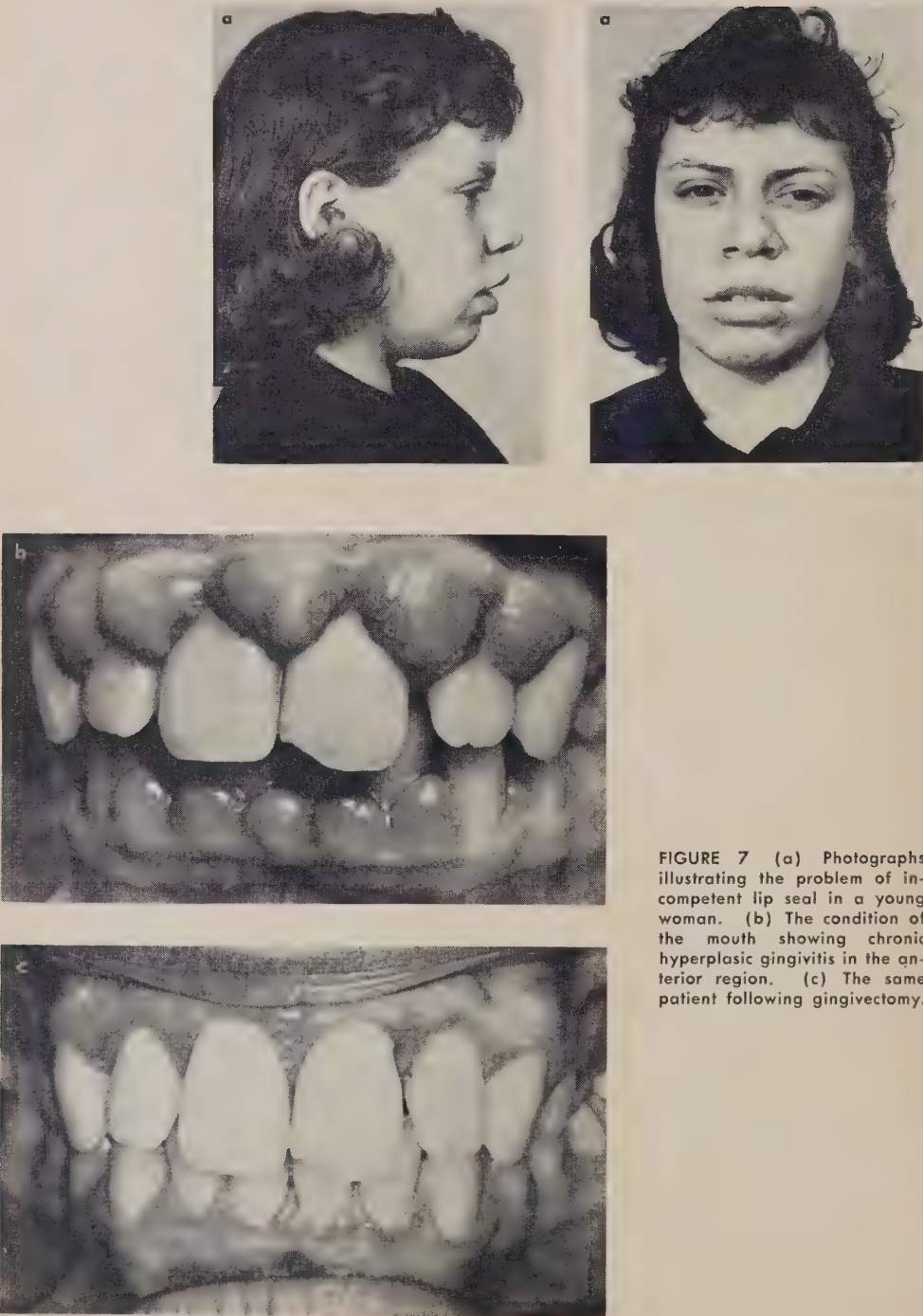


FIGURE 7 (a) Photographs illustrating the problem of incompetent lip seal in a young woman. (b) The condition of the mouth showing chronic hyperplastic gingivitis in the anterior region. (c) The same patient following gingivectomy.



FIGURE 8 Generalized chronic periodontitis or periodontitis simplex. On probing with a pocket measuring probe, pockets would be found. (After Blake and Trott: Periodontology; Butterworths).

are one or two exceptions to this general rule, but these do not nullify the general observation. The irritants in these cases are often multiple. Usually there is a summation of a number of factors, and sometimes it is impossible to detect all of them or assess their relative importance. Some of the factors, such as incompetent lip seal allowing mouth breathing (Figure 7), are impossible to correct. But then, paradoxically, not all mouth breathers have a chronic hyperplastic marginal gingivitis. And although one may use mouth guards at night in an attempt to eliminate such factors, one must not be too disappointed if failures occur, because we obviously do not yet understand all the factors which cause such an inflammatory reaction in the gingivae. On the whole, such cases require more extensive and persistent treatment if success is to be achieved.

3. Chronic Periodontitis

The gingivae may show little sign of inflammation or enlargement. Yet when a blunt graduated probe is passed between the tooth and the gingivae, a path-

ologically deepened gingival crevice will be found (Figure 8). This is a periodontal pocket. Although the aetiological factors which cause the inflammation and subsequent destruction of the supporting structures appear to be the same as those which cause a gingivitis (Blake and Trott, 1962),² we know that by no means every patient will develop pockets. However, once destruction has taken place, not only must the local irritating factors be eliminated, but the gingivae restored to health and function, usually by surgical intervention. Then, by scrupulous care on the part of the patient and the dentist, it does seem possible to halt this destructive process. In a few cases, however, the process continues in spite of the best efforts of the dentist and the patient.

4. Atrophy

Local irritation and inflammation may lead to atrophy of the marginal periodontal tissues, resulting in gingival recession (Figure 9). Here is another situation where there is little doubt that multiple aetiological factors are at play.

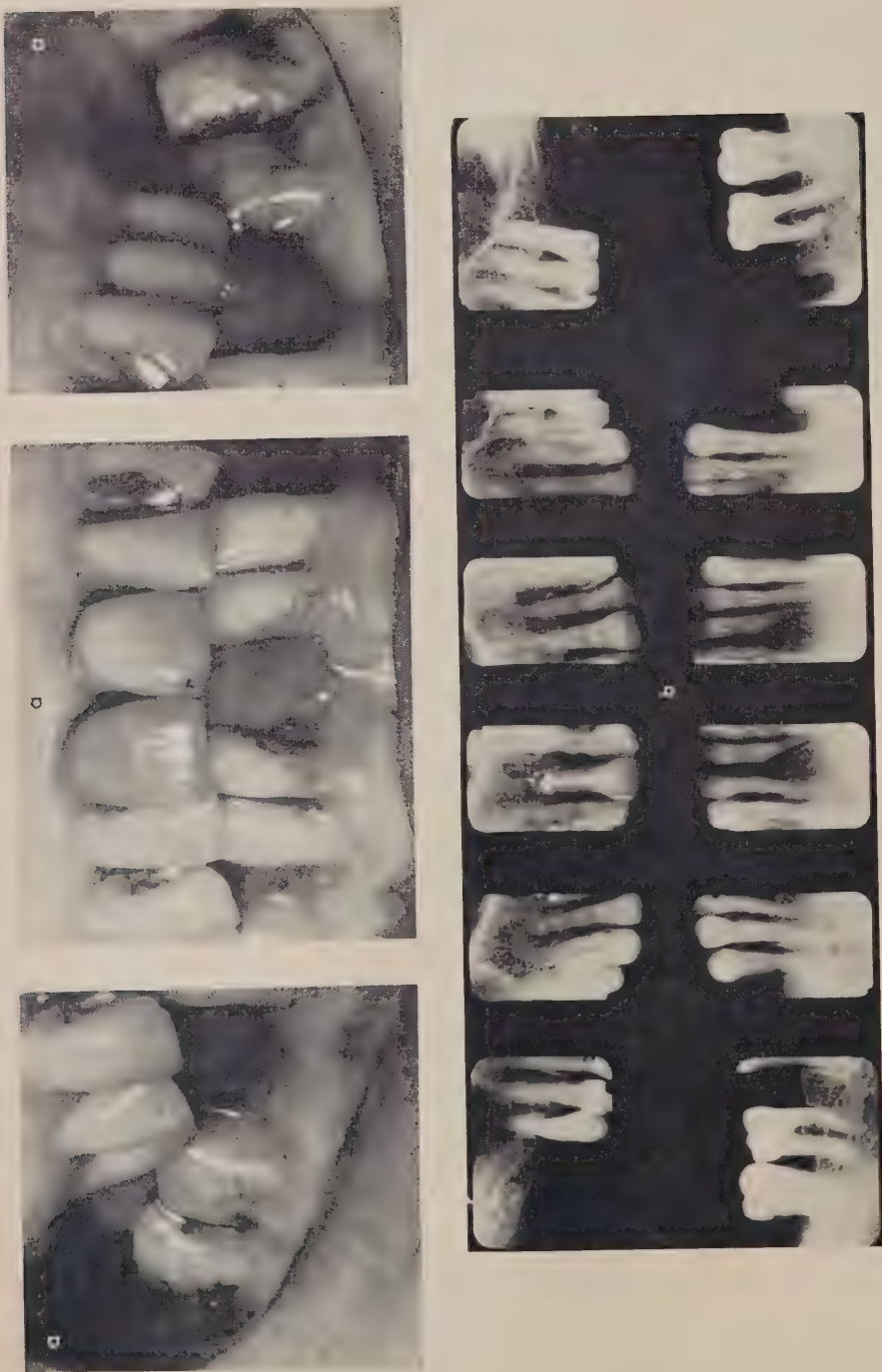


FIGURE 9 (a) Atrophy of the periodontal tissues. There is generalized gingival recession. The photograph was taken following extraction of the mandibular left first incisor and scaling of the teeth, prior to the construction of partial dentures. The teeth remaining are not mobile. (b) Radiograph of the same case showing the amount of bone support present. This illustrates the danger of making a diagnosis from the radiograph alone.

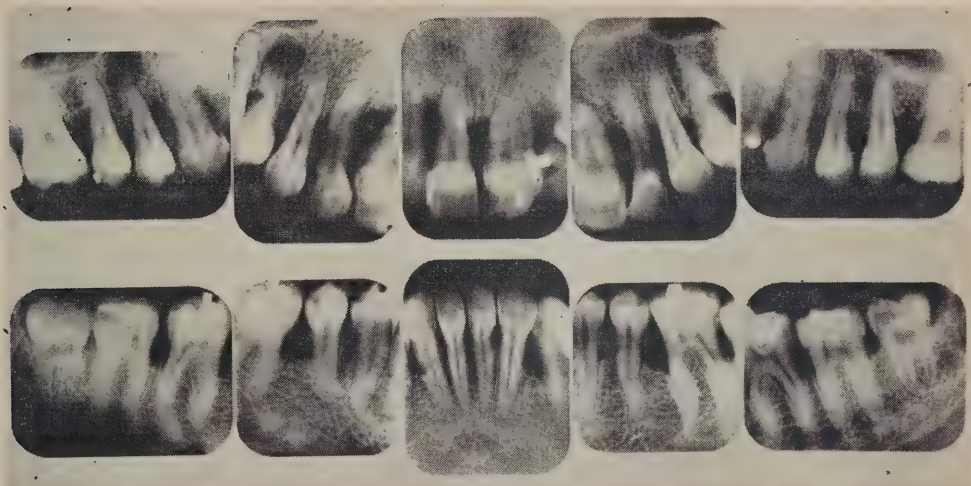


FIGURE 10 Full-mouth radiograph of a case of generalized chronic periodontitis or periodontitis simplex. There is an even amount of bone loss around all the teeth. (After Blake and Trott: *Periodontology*; Butterworths).

And again in trying to break the vicious cycle of inflammation and destruction, it is a little difficult to know if one has ever been completely successful.

Here then is the problem. There appear to be many features which are common. The local aetiological factors appear to have many similarities—calculus, plaque formation, overhanging restorations, food impaction, and so on. The normal gingival anatomy varies slightly from one individual to the next, but not to any great extent. Yet the resultant of the one acting upon the other is by no means the same, in every instance.

PERIODONTAL POCKETS

A periodontal pocket may be defined as a pathologically deepened gingival crevice. For practical purposes any gingival crevice of 4 mm. or more may be considered a pocket.

The easiest and most practical method of discovering pockets is to pass a blunt

graduated probe into the gingival crevice, especially in the interdental area, and to measure the distance from the base of the pocket to the gingival margin in millimetres. Having ascertained that there is a pathologically deepened crevice, it is necessary to answer the following questions:

First, is the pocket due to an enlargement of the gingivae, destruction of the periodontal attachment, or a combination of these two possibilities?

Secondly, is the pocket localized to one aspect of the tooth or does it continue right around the tooth in an even or uneven manner? Is the pocket of the infra-bony or supra-bony type?

Thirdly, is the pocketing localized to one area of the mouth, to one arch, or is it generalized? Has the pocketing any peculiar anatomical distribution around the mouth, for on this basis we try and differentiate between periodontitis simplex (Figure 10), periodontosis (Figure

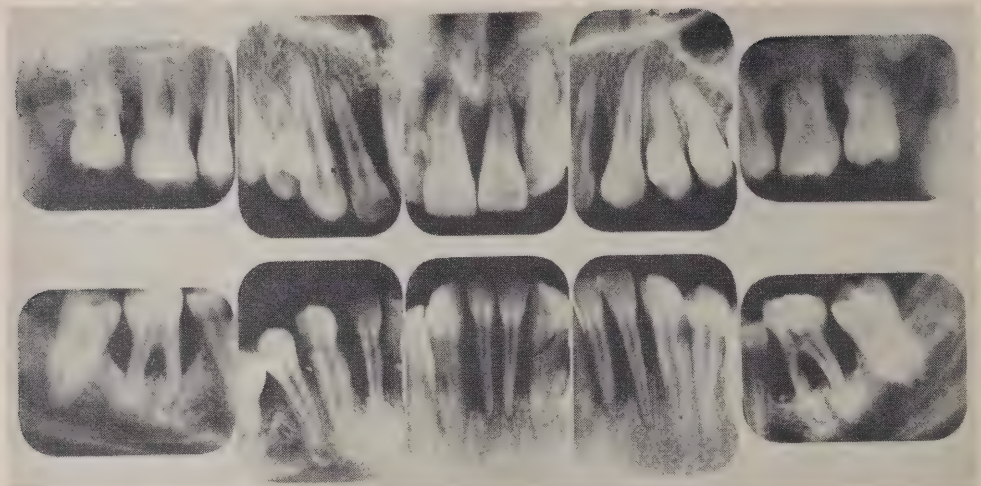


FIGURE 11 Full-mouth radiograph of a case of periodontosis in a young woman aged 17 years. There is marked bone loss around the maxillary and mandibular first molars and first incisors and around the maxillary second incisors, whereas the cuspid and bicuspid regions appear to be relatively immune. (After Blake and Trott: *Periodontology*; Butterworths).

11), and periodontitis complex (Figure 12) (Blake and Trott, 1962).²

Fourthly, what is the relationship between the bottom of the pocket and other anatomical landmarks such as the mucogingival junction, the labial fraena, and the underlying alveolar bone.

All these factors when taken into account with the state of the gingivae, the mobility of the teeth and the general status of the dentition, will help determine the link between aetiology and pathology and later, the prognosis of our treatment plan.

MOBILITY OF THE TEETH

In recent years precision instruments have been developed which measure the amount of force applied to a tooth and the degree of displacement. However, these instruments are still research tools and one still has to rely on the crude but effective method of digital testing for mobility.

A tooth can be loose for two reasons, which may or may not be combined.

First, the amount of periodontal attachment of the root may be so decreased that there is just inadequate support for the tooth. Destruction of the periodontal attachment can occur either from the marginal tissues as in chronic marginal periodontitis or from the apical tissues as in a chronic periapical periodontitis, or both. Secondly, the tooth may be subjected to an abnormal occlusal force either in the centric position or during lateral excursions, and may transmit traumatic stress to the supporting structures. These two factors may be at play at the same time.

If pathological mobility is found, two questions must be answered. Can the aetiological factors be removed and the periodontal structures returned to health? If this is possible, then can the tooth be made a functioning component of the arch?

CONCLUSION AND SUMMARY

Some eight years ago Professor Manley of Birmingham, England casually remark-

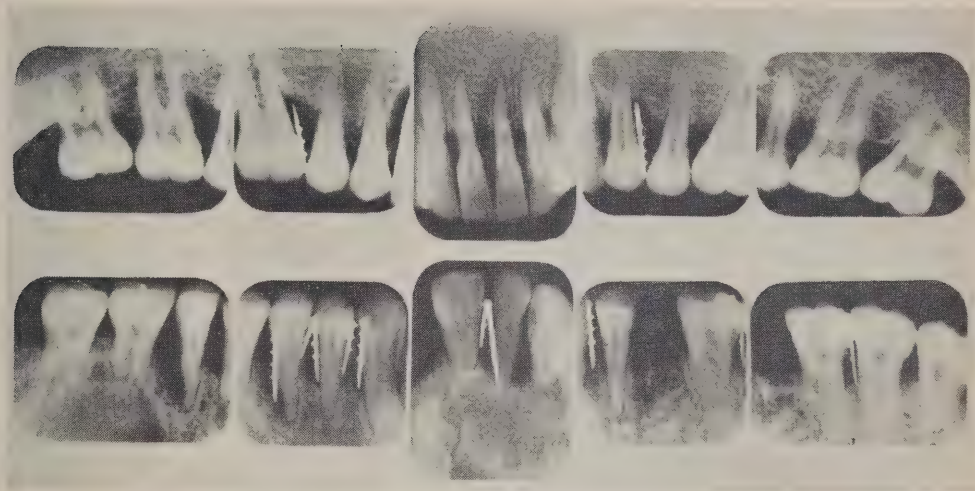


FIGURE 12 Full-mouth radiograph of a case of periodontitis complex marked with Hirschfield silver points. There is generalized, irregular marked loss of bone. (After Blake and Trott: Periodontology; Butterworths).

ed that it is in the understanding of the effects of inflammation on the periodontal tissues where the problem of periodontics really lies. Ever since the time of Celsus, inflammation has been a source of study and investigation, and although we know a lot more today than Celsus did, we are still far from the final answers.

It has been the object of this paper to show the dental practitioner some aspects of the biological approach to dental practice as seen by a periodontist.

The importance of how to set about making a diagnosis is first emphasized. With this in mind, a systematic method of taking a history similar to that used in medical practice is described. The importance of background knowledge enabling the practitioner to make the best possible use of this method is stressed. This leads to a brief discussion of some of the basic clinical changes which take place in the periodontal tissues when chronic inflammation is present. It has not been possible to describe in any detail the dynamic biological processes

which are continually at work in the periodontal tissues, but unless the practitioner is acutely aware of these processes and the subtle and varied forms they can take, he will be unable to render the best service to his patients.

RÉSUMÉ

Cet article expose l'aspect biologique de l'exercice dentaire en général, tel que conçu par le périodontiste. Il traite d'abord de la façon d'établir un diagnostic; ensuite, il décrit une façon systématique de faire une histoire de cas, comme on le fait en médecine. Cette connaissance du passé médical du patient a son importance, car elle aide le praticien dans ses traitements.

Suit une revue des principales modifications cliniques qui se produisent dans les tissus périodontaires en présence d'inflammation chronique. Ces changements sont classifiés dans trois genres de tissus: l'état de la gencive, les clapiers périodontiques et la mobilité des dents.

Le praticien, quoiqu'il lui soit impossible de décrire en détail les processus biologiques qui agissent constamment avec force dans les tissus périodentaires, doit être au courant de ces processus et des formes qu'ils peuvent prendre, s'il veut prodiguer les meilleurs services possibles à son patient.

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Biological Approach to Dental Practice: Endodontics

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In the past endodontic treatment was by definition "treatment within the tooth" and it commonly meant only root canal therapy. Today, endodontics is the broad study and treatment of the diseases of the pulp and of the diseases of the periapical tissues as they are affected by the pulp. The range of treatments now include all those within the tooth such as pulp cappings, pulpotomy, the use of cavity liners and sedative cements, as well as all the treatments associated with pulpless teeth. The era of the "dead tooth" has been replaced by one of biological concepts, and "dead teeth" are now correctly found only in specimen bottles.

In this new era where the endodontist works with the periodontist to give the patient "life-time" teeth, the importance of diagnosis and treatment planning has necessitated a re-evaluation of the phenomena of inflammation and a re-appraisal of the role of dental caries.

Pain is better understood as a symptom of inflammation. The need for inspection (for redness and swelling) and palpation (for swelling and heat) also becomes clearer when related to inflammation. On the other hand, the newly proposed use of steroid drugs for pulp therapy becomes questionable when examined in the light of their effect on inflammation and the spread of infections.

Carious lesions can no longer be passed off by the endodontist as a nuisance to be restored by others and forgotten. These lesions are the cause of approximately 50 per cent of all toothaches and thus are involved in a large part of dental diagnosis. The treatment of caries, of course, may account for an additional share of diagnostic problems in this day of the air-turbine handpiece and its thermal effects on the pulp.

It must be emphasized that treatment or mis-treatment within teeth (i.e. any treatment that penetrates deeper than the enamel) is a direct attack on pulp tissue. This may produce inflammation or premature ageing of the pulp, secondary dentine formation or irreversible reactions that result in pulp death.

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For the purpose of diagnosis and treatment planning the endodontist should consider dental caries as a chronic inflammatory disease of the oral cavity, not merely a mechanical restorative problem of individual teeth. As such, caries deserves the same thorough investigation and treatment accorded to the more dramatic diseases.

Well organized diagnostic procedures will facilitate treatment planning. Adequate treatment planning will enhance case presentation. Good case presentation will see fewer patients accept "simpler" and "cheaper" treatment by extraction.

DIAGNOSIS

A correct diagnosis and a comprehensive treatment plan can only be made for a patient's complaint and dental needs following a thorough examination. This examination must include a history as outlined in the preceding article, a clinical examination and a radiographic examination. The examination may also include special laboratory tests. When the examination is complete, a "provisional diagnosis" is made and treatment planning can then be considered. It has been emphasized by Grossman (1960)¹ that "correct treatment is based on correct diagnosis."

For endodontic treatment planning, an examination must supply the answers to four basic questions:

1. Which tooth is to be treated?
2. Can the tooth be treated?
3. Should the tooth be treated?
4. When should the tooth be treated?

Which Tooth Is to Be Treated

Some pulp involved teeth that require endodontic treatment are readily identified. Either the patient can locate them from the symptoms, or the dentist can locate them through direct examination.

Ready identification of the tooth is possible when inflammation has spread beyond the pulp canal to produce swelling and redness of the overlying tissues or sensitivity to percussion.

If, however, pulpal inflammation and pain alone are present, the identification is more difficult, and this is particularly so with chronic or referred pain. Glick (1962)² has stated that "prolonged disturbances were more likely to give rise to distant pain than were short-lived stimulations. Severity of pain is not related to the actual state of the pulp."

If inspection, palpation and percussion have not definitely located the tooth involved, pulp vitality tests should be made with the vitalometer and with thermal changes. These tests, however, are only valid by comparison. They do not determine absolute vitality. They merely indicate that one tooth, the affected one, reacts more or reacts less, or differently than do the non-affected teeth. Many obviously healthy teeth should be tested with the vitalometer to give a baseline of sensitivity, and the teeth tested should be isolated individually with a 1-hole rubber dam. Only the test cavity can be used as a pulp test that will record absolute vitality.

When all else fails, the selective use of anaesthesia may localize and identify a pulp involved tooth.

Radiographs are routinely taken as part of the examination. They are much abused if their purpose is to locate soft tissue pathosis (pulpitis, abscess and periodontal disease) because radiographs show only the results of hard tissue pathosis such as dental caries, large periapical lesions and the height of interdental bone. It is unfortunate that radiographs are all too often expected to be the total answer in themselves.

Recently, Bender and Seltzer (1961)³ have shown experimentally that the dental radiograph only records bony defects that involve compact bone. Either the buccal or lingual cortical plates or the lamina dura must be involved, as the

loss of spongy bone alone is not recorded. This, of course, is helpful in giving a third dimension to large apical rarefactions, but not too helpful for identifying small lesions or localizing a source of pain. Wais (1958)⁴ furthermore showed that change in bone density (periapical rarefaction) is not pathognomonic of either apical cysts, granulomata or chronic abscesses.

The classical categorization of pulp disease by pain into many different types has been deliberately avoided because it serves little purpose. Since we only treat two kinds of teeth endodontically—teeth with vital pulps or pulpless teeth—the examination only needs to reveal (1) which tooth is involved, and (2) whether this tooth is pulpless, or (3) whether the pulp is inflamed but vital. Unfortunately, the examination of a tooth with a vital pulp may only delineate inflammation, when it is present, as either acute or chronic. The examination cannot quantitate the amount of inflammation or judge the extent of the apical spread. Snyder (1961)⁵ states that “clinically an inflammatory response is either acute or chronic and even this is hazardous when we are dealing with the dental pulp, for both types may exist concurrently.” To date, the state of inflammation in a dental pulp is an autopsy diagnosis made by microscopic examination. Because of this inability to diagnose the extent and spread of pulpal inflammation, much vital pulp therapy remains empiric.

Can the Tooth Be Treated

When the examination has accurately located the involved tooth, treatment can be considered. The type of treatment selected must take into consideration the health or pathology of the involved tissues, the anatomical limitations on the immediate endodontic treatment, the anatomical limits of the future restoration, and the ability of the practitioner. Consideration of alternative treatments and the patient's health are discussed later.

Treatment for teeth with a vital pulp includes:

1. Pulp capping—(a) indirect, (b) direct
2. Pulpotomy
3. Pulpectomy and root filling
4. Extraction

Treatment for pulpless teeth includes:

1. Root filling—(a) without surgery, (b) with surgery
2. Extraction

Vital Pulp Therapy.—Treatment of the vital pulp by direct capping of exposures remains a controversial subject. Calcium hydroxide capping of the direct exposure and pulpotomy is the most reliable treatment to stand the test of time. However, this treatment is basically contrary to biological principles because it destroys tissue (superficial necrotic layer) to save tissue. There is also evidence that calcium hydroxide prematurely ages the pulp, that the dentine bridge produced is analogous to Swiss cheese on account of inclusions of vital tissue. Frequently, under a dentine bridge, this premature ageing may obliterate the canal with secondary dentine; then the pulp degenerates and a periapical rarefied area develops. These teeth can then be saved only by the retrograde amalgam apical filling.

Because of these potentially adverse reactions, calcium hydroxide pulp capping should be reserved for slightly involved teeth and for young teeth with undeveloped apices. In both cases permanent restorations should be delayed until direct observation and check-up has demonstrated bridging and vitality.

In the case of the pulpotomy, yearly check-ups are required to determine whether the apex does close. If, however, later examination indicates that the canal is closing, immediate pulp extirpation and root canal therapy is indicated.

Less controversial therapy for the vital pulp is indirect pulp capping, a treat-

ment that allows the pulp to heal itself. This is the biological approach to treating dental caries as a chronic inflammatory disease, particularly when used routinely throughout the mouth at the first appointment.

This consists of the removal of the superficial and grossly infected layer of carious material in all affected teeth. Anaesthesia is not used and instrumentation is gently continued until pain is encountered. Medication may consist of zinc oxide and eugenol cement alone; zinc oxide and eugenol cement covering a layer of calcium hydroxide [Law and Lewis (1961)],⁶ or a mild germicide, such as camphorated parachlorophenol [Massler et al (1957)].⁷ To be successful in this treatment one must absolutely seal out oral cavity contaminants and maintain this seal for six to eight weeks. Metal bands or crowns may be required to maintain the seal. This, however, is a temporary treatment and filling. The remaining carious material must be removed at a later appointment. Caries at best will only remain inactive while the seal lasts. Zinc oxide and eugenol cement is the only material that seals adequately under these conditions. This treatment arrests the disease process, maintains the patient's comfort and saves teeth.

Prevention remains the treatment of choice in vital pulp therapy. Recent work by Langeland (1961),⁸ has shown that gutta-percha, a widely used temporary filling material, has direct and inflammatory effects on the vital pulp. Even amalgam is not without its toxic effects [Swerdlow and Stanley (1962)]⁹ as commonly thought.

Pulpless Tooth Therapy.—Treatment of the pulpless tooth by obturating the root canal can be one of the most successful and permanent dental procedures. The obturation may be accomplished from the occlusal aspect by using gutta-percha points and cement or silver points and cement, or from the apex by placing a silver amalgam filling. The success of

these treatments is reported to be 90 per cent or better in the practitioner's hands [Strindberg (1956)]¹⁰ and 80 percent or better in student hands [Grahén and Hansson (1961)].¹¹ In both these studies the anatomically difficult cases were more successful than the less difficult cases. For 1,196 teeth studied, the results with molars were more successful than with bicuspid, and the results with bicuspid more successful than with anterior teeth. The studies also indicated that obturation following vital pulp extirpation should be at the site of the wound, that is, approximately 1½ mm. short of the radiographic apex. The treatment of pulpless teeth, however, was more successful when obturated to the radiographic apex and when the apical canal was not reamed larger than the diameter of a No. 3 Kerr reamer.

The increased and continuing success of root canal therapy is in part due to the increased use of diagnostic radiographs during treatment, and in part due to the increased number of basic research studies that are modifying treatment concepts.

The role of infection is now better understood because of the bacteriological studies of cultures. Recently, Shindel (1961)¹² showed that large periapical lesions were sterile in sixty out of sixty-three cases studied. This work lends support to the argument that a granuloma is an area where bacteria are destroyed, not an area where they are produced. This should reduce the need for apical surgery.

Bacteriological controls can make canal medication and treatment more effective. Sensitivity tests, using medicated disks, show which drug will most effectively control a specific resistant infection [Fol-som and Stuteville (1960)]¹³. Routine cultures taken during treatment indicate the efficacy of treatment and of treatment procedures such as sealing.

Although the "negative culture" does not necessarily imply sterility according to Ingle and Zeldow (1958),¹⁴ it still remains the most reliable method for de-

termining the bacterial status of the root canal. Recent studies by Thordarson (1962)¹⁵ at the University of Manitoba show that even this technique can be improved by 30 per cent, if a "wet point" inoculum is used instead of the routine "dry point." Inadequate or not, culture controlled treatment reduces the number of appointments required. Incubators and culture media are now within "do-it-yourself" reach and no longer provide an excuse for not culturing.

Closely allied to bacteriological studies have been the studies of medicaments. Although the perfect medicament is yet to be found, more reliable methods of selection are now available than the presence or absence of a strong antiseptic smell.

Because of the possibility of contact with the periapical tissues, only drugs of low toxicity should be used in the root canal. Metacresyl acetate,* shown to be the least toxic of the routine drugs by Schilder and Amsterdam (1959),¹⁶ is recommended for treatment of vital pulp extirpations. Camphorated parachlorophenol, slightly more toxic, is better limited to pulpless tooth treatment. Similar tissue tolerance studies were reported by Torneck (1961).¹⁷ Recent studies of these drugs and their surface tensions indicate that a medicament placed on a cotton pellet in the coronal cavity will penetrate into the root canal and not over-medicate. An empty canal also allows room for an inflammatory exudate if it results. There is good reason to believe from these studies that some post-operative pain is simply frank over-medication. If the apical tissues are often sterile [Shindle (1961)],¹² or readily made sterile by the body defences, it is reasonable to believe that only the canal, because it lacks a blood circulation, requires medication, and that medicaments should be confined to the canal.

Along with the improved cultures and medication, there are also improved fill-

ing materials and methods for root canal obturation. Their development has been greatly assisted by radioactive isotope tracer studies. Sealing studies with isotopes reported by Marshall et al (1961)¹⁸ found that all the commonly used root canal fillings sealed better and more readily than did coronal restorations that leaked consistently, as reported by Going and Massler (1960).¹⁹ A filling of a single fitted gutta-percha point and sealer was an adequate seal, but a filling that was placed with lateral condensation and used multiple gutta-percha points, provided a much better seal. A silver point and sealer filling was the poorest sealer of the combination fillings.

Studies on the permeability of dentine by Marshall and Massler (1960),²⁰ confirmed the rationale for some techniques used in root canal therapy. Irrigation of root canals alternately with sodium hypochlorite solution and hydrogen peroxide made the dentine more permeable. This would help penetration of medicaments and should facilitate sterilization. This increased permeability was in marked contrast to the impermeability of canals treated with sulphuric acid, thus perhaps explaining the success of one-appointment acid sterilization and oral surgery treatments.

This study also recorded a large number of teeth with translucent or "sclerotic" apical dentine. This dentine was absolutely impermeable to radioisotopes and dye tracers. This would suggest that this dentine is also impermeable to bacteria. More recently, Nalbandian et al (1960)²¹ have shown that the presence of sclerotic root dentine is a function of ageing. It would seem that in older ages at least, reaming and filing at the apex is only required for the efficiency of the root filling seal and not for dentine sterilization.

These many and varied observations on treatments for pulpless teeth are not complete unless we mention cavity seal. Only with an absolute cavity seal can we effectively treat the pulpless tooth. Parris and Kapsmalis (1960)²² found that

*Metacresyl acetate, *Cresatin*; Merck & Co., Inc.

only zinc oxide and eugenol cement, amalgam and *Cavit** sealed at room temperature and that only *Cavit* maintained its seal after repeated temperature changes.

With an adequate seal such as *Cavit* or plastic reinforced zinc oxide and eugenol cement [Weiss (1958)]²³ treatments can be spaced one or two weeks apart. This is sometimes more convenient for office practice and if discomfort is encountered during or after treatment, it can more readily be forgotten between well spaced appointments.

Surgical Therapy.—With the advent of systemic antibiotic coverage for surgery and its complications, very few teeth with a functional or aesthetic value to the patient are untreatable. Endodontic surgery includes not only apicoectomy but also periapical curettage, incision for drainage, intentional reimplantation, root amputation and retrograde apical amalgam fillings, to mention a few procedures. Even teeth with transverse fractures can be treated and maintained. These teeth are rendered healthy and functional through surgical removal of the apical fragment and placement of a cast chrome root canal post that extends beyond the canal in order to stabilize the remaining coronal portion of the tooth [Kaiser (1962)].²⁴

Reimplantation techniques suitable for office practice have been outlined by Loë and Waerhaug (1961)²⁵ in their experimental studies. A vital re-attachment without ankylosis resulted in all cases where the periodontal ligament was not destroyed. Drying, handling, scraping and immersion in caustic sterilizing solutions tended to destroy the periodontal ligament. Studies reported by Massler (1962)²⁶ suggest that it is more successful to reimplant the avulsed tooth untreated and fill the root canal at a later date

following re-attachment. Schilder (1962)²⁷ reported a number of successful cases of teeth treated by intentional extraction, root filling from the apex and reimplantation in situations not amenable to periapical surgery. Re-attachment occurred in all cases without ankylosis and resorption. The length of time during which the tooth is out of the mouth seems to be of the essence.

Large periapical rarefactions can be resolved with surgical drainage without the fear of damaging adjacent vital teeth by curettage. The successful use of rubber dam double T drains for this purpose is outlined by Sommer et al (1961).²⁸

Finally, it can be suggested that no root canal filling has failed until, in the cases permitting, a retrograde apical amalgam filling has been attempted unsuccessfully. With the advantages of wide flap access, the tolerance of apical tissues to amalgam and the atraumatic methods of washed field air-turbine handpiece bone removal, few cases are contra-indicated.

The response to the second question of treatment planning, "can it be treated," must be a qualified yes. Few of the techniques and principles reviewed are beyond the skill or ability of the concerned dentist. Anatomical limitations are few if reverse filling is practised, restorative limitations few if rubber base impression techniques are followed. The pathological condition and treatment problems are reconciled with an understanding of the basic phenomena of inflammation. Treatment procedures are reconciled with the use of a systematic approach to instrumentation and a philosophy that allows nature to do the work.

Should the Tooth Be Treated

This question involves consideration for the patient's oral and general health, cost of the service, and, above all, the ability of the patient to co-operate with and maintain the final treatment.

*Zinc oxide, calcium sulphate, zinc sulphate, glycolacetate, polyvinylacetate, polyvinylchloride-acetate, triethanolamine, red pigment; *Cavit*, Premier Dental Products Co.

Although there seems to be no end to the controversy on focal infection, a history of subacute bacterial endocarditis appears to be the only medical condition universally accepted on as contra-indicating root canal therapy. Patients with rheumatic heart disease and congenital heart defects or other generalized debilities suffer less trauma from root canal therapy and bacteraemias than from dental extractions, provided they are adequately protected with penicillin or erythromycin. Such prophylactic coverage is described in brochures published by the American Heart Association and obtainable from the American Dental Association.*

Apically involved teeth should not be the object of a "wait and see" attitude, even though the acute apical abscess is the only endodontic condition that seems to be infectious. Teeth with a pathological periodontal attachment apically, although they are generally less hazardous than are those with a pathological gingival attachment, are an unnecessary burden to the oral health and not to be tolerated.

When Should the Tooth Be Treated

Endodontic therapy is elective as is all dental treatment except extraction, and the decision to treat or not to treat belongs finally to the patient. Meade (1961)²⁹ outlines the patient's role in dental treatment and illustrates how he can be helped to accept and appreciate such procedures. Not all dental treatment is urgent treatment and it is logical to establish a "Treatment Priority" much as one formulates a "Treatment Plan". The proposed treatments must be so ordered that the critical situations are handled first and in a manner acceptable to both the patient and the practitioner. The relief of pain, treatment of infection, removal of carious material and the restor-

ation of oral function must all be considered and fitted into the treatment priority.

The relief of pain is perhaps the greatest test of our clinical ability and the most demanding of our obligations. Osler's classic words give guidance here: "Firstly do no harm." Although the patient has the right to expect relief from pain, it must not be at the expense of his future health. Radical surgical treatment or relief of pain by extraction may unduly complicate future treatment. Often the patient and the dentist both need "a breathing spell" before the proper treatment plan can be agreed upon. Palliative and supportive care with sedative cements, systemic antibiotics and anodynes, or surgical drainage instead of extraction will gain the necessary time. The entire oral cavity should be treated for the elimination of pain. It does little good to medicate and sedate if all the gross carious lesions are not simultaneously sedated with a therapeutic cement. Thought should be given first to the prevention of pain.

If indirect pulp capping is carried out at this stage, definitive treatment and restorative procedures are usually more successful later.

Treatment of infection follows the control of pain. This is generally considered as treatment of soft tissue pathological conditions but may include the hard tissue periapical conditions that did not require early treatment for pain. This treatment is mostly periodontal therapy, and if pre-treatment has been well done initially with sedative cements, this phase may be continued until it is successful or until the patient maintains the condition adequately with home care [Meade (1961)].²⁹ Inability of the patient to cope with his share of the treatment in this phase could preclude any further service.

The restorative treatment of dental caries follows the control of infection and the success of periodontal therapy. Definitive restorations may be placed using either amalgam or gold. If patient control of dietary factors and thus control

*How the dentist can protect his patients from bacterial endocarditis. American Heart Association.

of rampant caries is doubtful, gold restorations because of their greater marginal permeability and susceptibility to recurrent caries, should be delayed. Because of this, it is doubtful whether gold restorations are indicated for any but the exceptional patient before their late twenties.

Finally consideration is given to the restoration of maximum function by means of fixed and removable appliances. This phase can be planned from the start but should only be completed if the supporting tissues of the teeth remain healthy and if they indicate a need for such help. The glamour of full-mouth rehabilitation can result in overestimation of the ability of periodontal support to remain healthy. A total lack of teeth or a few missing teeth cause far less injury than does an infected, over-loaded periodontium. With the case load that most practices carry today, more care should be taken to let the patient convince the dentist that he wants and will maintain the advanced elective types of treatment.

SUMMARY

A biological approach to endodontics is presented. This includes some new treatment concepts. A simplified method of diagnosis and treatment planning is suggested based on the answers to four questions: Which tooth is to be treated? Can the tooth be treated? Should the tooth be treated? When should the tooth be treated? The limitations of radiographs in diagnosis are stressed and the results of recent research are applied to endodontic treatment.

Most teeth with a functional or aesthetic value to the patient can be maintained in health following modern endodontic therapy, if sufficient periodontal support remains.

RÉSUMÉ

L'examen pratiqué avant un traitement d'endodontie doit reposer sur quatre prin-

cipaux facteurs: (1) Quelle dent faut-il traiter? (2) La dent peut-elle être traitée? (3) La dent devrait-elle être traitée? (4) Quand la dent devrait-elle être traitée?

L'auteur commente les méthodes utilisées pour préciser le genre d'affection dont souffre la pulpe d'une dent: examen, palpation, percussion, test thermique, vitalométrie, anesthésie sélective et radiologie.

Il classifie les dents en vue d'un traitement d'endodontie en deux catégories: (1) dents avec pulpe vivante; (2) dents avec pulpe dévitalisée. Il expose les diverses techniques préconisées pour les pulpes vivantes: coiffage direct et indirect, pulpotomie, pulpectomie, traitement de canal et extraction. Les méthodes pour les pulpes dévitalisées comprennent le traitement de canal avec ou sans chirurgie et l'extraction.

L'auteur passe en revue l'efficacité des médicaments les plus connus en endodontie selon les diverses circonstances; il déclare que le prélèvement de cultures au cours du traitement constitue encore la méthode la plus sûre de s'assurer de la présence de bactéries dans le canal radiculaire.

La seule contre-indication universellement reconnue à l'endodontie est une histoire d'endocardite sub-aiguë. La plupart des dents qui ont une valeur esthétique aux yeux du patient peuvent être l'objet d'endodontie, si elles sont entourées d'un support osseux suffisant.

Les diverses opérations comme l'abolition de la douleur, l'élimination de l'infection, l'ablation de la carie et la restauration fonctionnelle doivent, dans tout plan de traitement, être agencées selon un ordre de priorité. Le soulagement de la douleur s'obtient à l'aide de palliatifs ou de ciments analgésiques, par des antibiotiques, des anodins ou un drainage chirurgical plutôt que l'extraction.

Il faut songer à toute la cavité buccale, quand il s'agit de soulager la douleur; il ne sert à rien de soulager un endroit, s'il y a plusieurs cavités profondes qui nécessitent toutes des pansements.

L'élimination de l'infection vient en second lieu. Ce traitement se confie surtout à la membrane périodentaire. L'obturation des cavités et la guérison des lésions osseuses s'effectuent seulement après le contrôle de l'infection et quand le traitement de la membrane périodentaire est terminé. Les restaurations définitives, telles que ponts et dentiers partiels pour rétablir la fonction physiologique, constituent la dernière phase du traitement.

Toutes ces opérations doivent être envisagées au début et réalisées seulement si les tissus de support des dents sont sains et s'ils ont une indication pour ce genre de traitement.

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SPECIAL ARTICLE

The Division of Dental Research, University of Toronto

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The Division of Dental Research at the Faculty of Dentistry, University of Toronto, was established in 1952, and this year enters its tenth year of operation. A summary of the activities of the Division is undertaken at this time for two reasons. First, by relating details of research by the staff, we acknowledge an obligation to account for the resources committed to us by the members of the dental profession across Canada, by industry, and by private individuals. Second, since the problems in dental research are not specific to any geographical region, we may by tracing the development of dental research in Toronto also apply and extend some of the comments to the general area of increasing the research potential in dentistry.

RESEARCH PRIOR TO 1950

As early as 1928, the late Dean W. Seccombe laid down a plan for the development of research in a faculty of dentistry. Some of the early philosophies expounded by Dr. Seccombe have withstood the test of time and merit repeating. "Research is not something extraneous.

It can not be superimposed from without but is a natural, normal growth within. It is just as essential to the life of a teacher to strive to know the unknown as to teach the known."¹ While the philosophies of the early years are sound, implementation of programs designed to develop research was slow. Few individuals in the Faculty received adequate training in research. In addition, a lack of funds and suitable facilities thwarted efforts to increase research activities.

While research was not a major faculty activity prior to 1950, a small number of dedicated individuals published significant papers relating to the histopathology of periodontal disease, nutrition and caries, and the properties of dental materials. In addition, a sincere effort was being made by the staff to emphasize prevention in the teaching program. As early as 1916, the Department of Preventive Dentistry was formed in the Faculty of Dentistry. What is more important, there developed an increased awareness that the long range solution to the problem of dental health must be through research and prevention, and that the vitality of a teaching program can be maintained only if it is in contact with the currents of new knowledge. Having decided the general direction of the faculty program, it remained to recruit and stimulate graduates to undertake training for careers in teaching and research. The

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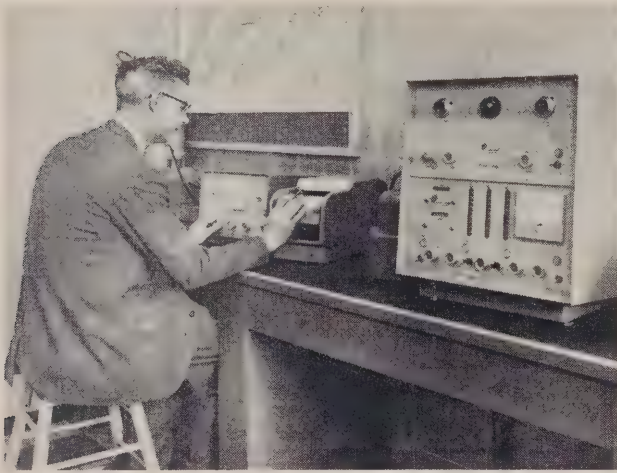


FIGURE 1 The radioactivity of a sample of tooth powder is being measured by a radiation analyzer.

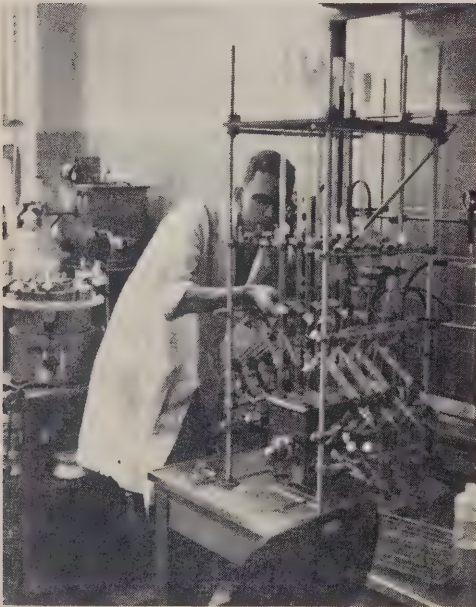


FIGURE 2 Illustration of the biochemical apparatus used for fluoride analyses and operated by a third-year dental student.

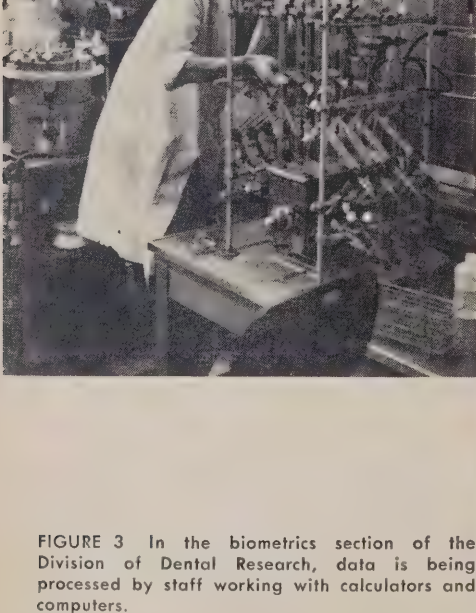
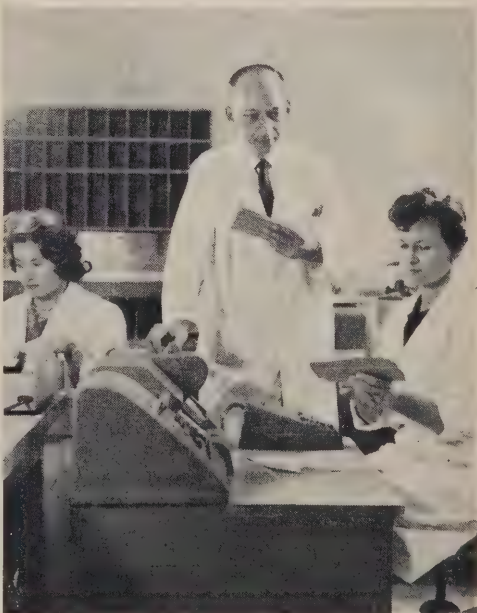


FIGURE 3 In the biometrics section of the Division of Dental Research, data is being processed by staff working with calculators and computers.



stage was set for the development of research in the Faculty.

PLAN FOR DEVELOPMENT OF RESEARCH

Training of Staff for Research. — Dean R. G. Ellis deserves much of the credit for taking the first step in solving the problem of shortage of trained research workers. In 1946-47, he implemented a fellowship program designed to encourage young graduates in dentistry with high academic qualifications to undertake training in the basic sciences. Graduate training fellowships were made available to this Faculty through the W. K. Kellogg Foundation and the Canadian Dental Association. Subsequently, the Associate Committee on Dental Research of the National Research Council of Canada also inaugurated graduate fellowships to enable students to obtain training in basic sciences. It is indicative of a farsighted policy that in attempting to build up research, first priority was given to the training of the staff.

Five years after the implementation of the training programs, graduates with training in one of the basic sciences of anatomy, bacteriology, biochemistry, biometrics and pathology were added to the staff of the Faculty. The first requisite in the establishment of a research unit, viz. a nucleus of well-trained personnel, was achieved. The next requirement was funds in order to buy equipment, build laboratories, and procure technical assistance.

Formation of the Division of Dental Research and the Campaign for Funds. — It became apparent as early as 1951 that the campaign for funds for research would be facilitated if the research activities of the Faculty were integrated in a single, administrative unit. Accordingly, the Division of Dental Research was established in 1952 by the President of the University upon the request of the Council of the Faculty of Dentistry. Its stated objectives were: (1) the develop-

ment of new knowledge concerning oral structures and their environment in health and disease through research in the basic sciences; (2) the training of personnel in the sciences basic to the pursuit of careers in teaching and science; and (3) the stimulation of the interest of undergraduates and graduates in dentistry, and of the public, in an effective program of research in dentistry.

The first chairman of the Division was J. B. Macdonald, who was also one of the first students to undergo graduate training under the program supported by the Kellogg Foundation. He played a vital role in the initial formation and the subsequent developmental period of the Division of Dental Research. Dr. Macdonald's energy and foresight were also recognized by others and this led to his subsequent appointments as Director of the Forsyth Dental Infirmary, an affiliate of the School of Dental Medicine at Harvard University, and more recently, as President of the University of British Columbia. The members of the Division of Dental Research record his contribution to research with pleasure and with pride.

Members of the newly formed Division of Dental Research next held discussions with top business and professional men relating to the problem of finances. From these discussions developed the idea that a fund raising campaign should be started in order to provide a principal fund for support of a research program for a period of at least five years. Also, it was decided that members of the dental profession should be approached first and at a later time the campaign should be extended to the business community.

Thus, in the spring of 1953, an appeal for funds was made to the dental profession in the province of Ontario, and to the alumni of the Faculty of Dentistry, University of Toronto. Over 1,000 dentists made contributions which in April 1961, amounted to over \$137,000. Some of the contributions were in the form of five-year pledges, others were single con-

tributions. The response of the student body at the Faculty was a source of joy to the research group. They dug deeply into limited resources in order to make a contribution to the research program. The President of the University, the late Dr. Sydney Smith, in his annual report, 1954-55, wrote about the campaign as follows, "The staff, students and graduates of the Faculty of Dentistry have contributed magnificently to a campaign for research funds, demonstrating thereby their loyalty and enthusiasm for the advancement of knowledge and the improvement of techniques in dentistry."

After the demonstration by the members of the dental profession of their willingness to help themselves, the profession's chief 'liaison officer', C. H. M. Williams, approached prominent members of the local business community for further assistance. Dr. Williams' indefatigable efforts on behalf of dental research are gratefully remembered by all who were connected with the campaign. Two members of the business community, Mr. George Black and Mr. Wallace McCutcheon, expressed interest in the dental research program. These two business leaders co-chaired an appeal on behalf of dental research which was carried to corporations, foundations and interested private citizens. Through their efforts, contributions in the amount of \$120,000 were received. It was a source of great inspiration to members of the Division to work with Messrs. Black and McCutcheon, both of whom gave willingly of their time, energy and money in order to assist a public health problem. A permanent record of their efforts may be observed in the improved facilities for dental research that now exist, and also in the contributions made to dental science by members of the Division.

The money raised in the campaign was used to support construction of laboratories and animal quarters, and to purchase equipment in the old building. The funds were also used for administration. The initial estimate indicated the money would last for a period of five years, or

until such time as the new research quarters would be completed in 1959. Because more money in the form of grants-in-aid of research from federal sources became available during these years, it was possible to extend the existence of the fund well beyond the five years originally planned. Ten years have elapsed since the money was raised, and while the principal sum is rapidly being diminished, even today it plays a significant role in supporting the research program at the Division of Dental Research.

DIVISION OF DENTAL RESEARCH AFTER 1959

Research Quarters in the New Dental Building.—Another chapter in the activities of the Division of Dental Research was written when the new Faculty of Dentistry building at the University of Toronto was completed in which, on the fourth and fifth floors, are housed the excellent new research quarters. The facilities were carefully planned with an eye to the long term objectives. They include laboratories for histopathology-histochemistry, bacteriology, biochemistry, biometrics, pathology, growth and development and nuclear biology. The new, air-conditioned animal quarters are in sharp contrast to the old improvised hut at 230 College Street, where temperatures rose and fell with the sun, and where space would permit only rodent animal research.

Along with the improved physical quarters, urgently needed equipment was also acquired. Low-background counters for isotope work, and chromatography, microradiography, and computing equipment were acquired, which together with the new physical facilities, permit a wide range of research activities.

Staff.—At present, a total of twenty-one academic staff members are actively engaged in research under the aegis of the Faculty of Dentistry. Of these, eight are full-time members of the teaching staff, while one person is employed as

a full-time research worker and is sponsored by a grant. Most staff members have, in addition to research, heavy assignments in teaching and administration programs. While it is desirable that full-time teaching staff devote more time to research, this should not be accomplished by a segregation of teaching and research. The vitality of a teaching program is intimately linked with research, and conversely, research gains in perspective from the didactic and clinical programs in the school. The simplest way to free more time for research is to augment the number of full-time staff appointments. This is not easily accomplished for there is, at present, a critical shortage of teachers in dentistry who have advanced training in basic and clinical research.

The academic staff are supported in their program by eleven capable technicians and two secretaries. Two of the technicians have university training in the basic sciences. Since each staff member has multiple duties to discharge besides research, technical and secretarial assistance forms an important part of a research organization. This does not imply that successful research can be accomplished by proxy. Technicians are an important auxiliary, and the calibre of the technical help is an important factor in the progress of a research program. It has been the experience of several staff members that an acute shortage of highly trained technicians, particularly in the biochemical and nuclear biology areas, exists today. Facilities for their training should be expanded in universities and technical institutes.

Present Status of the Research Program.—The research program at the Division of Dental Research is related to the three major dental public health problems, viz, dental caries, periodontal disease and malocclusion. The work consists of basic investigations into the composition, growth and structure of oral and related tissues. If there is a central theme to the program, it is the study of the metabo-

lism of hard tissues. In some areas, an integrative program is stressed. In this way, a given problem may be attacked on a multidisciplinary level by obtaining and synthesizing information from biochemical, histological, microradiographic, and autoradiographic studies.

During the past ten years, a total of 140 research articles has been published in basic science, dental research and other journals. During the two years covering 1959-61, there were twenty-eight publications by Division staff members, which compares very favourably with the five research publications which mark the first years, 1953-54, of the Division of Dental Research. The scope of the research work may best be illustrated by referring to some published studies.

1. (a) Tooth morphology in the laboratory animal may be significantly affected by altering the developmental environment of teeth through nutrition.² (b) Smooth and pitted surface carious lesions in humans are not highly correlated, and presumably differ to some degree in susceptibility.³ (c) The finding, in humans, that more pit and fissure caries tends to develop in larger teeth supports the hypothesis that morphology is important in determining the susceptibility of teeth to caries.⁴

2. Chromatography techniques have indicated the presence of hitherto unreported carbohydrate components in enamel. The following sugars were identified from enamel hydrolysates: galactose, glucose, mannose, fucose, rhamnose and xylose. These components probably exist in enamel as a carbohydrate-protein complex, and are basic constituents of the enamel organic framework. Tentative evidence for the existence of two amino sugars in enamel has been obtained.^{5,6}

3. Topical stannous fluoride was found effective in significantly reducing caries in 229 pre-school children. After the second year of the study, the d.e.f. surface increment was 29 per cent lower for the

experimental than for the control groups.⁷

4. A method for demineralization of hard tissues by organic chelating agents at neutral pH has been developed. This method permits dissolution of mineral salts from hard tissues without subjecting specimens to acid action.⁸

5. The amount of strontium⁹⁰ in teeth of children and bovine teeth is being investigated. Teeth, unlike bone, retain most elements incorporated in them during calcification. In addition, teeth are easier to obtain than bone; hence, they are a valuable tissue for strontium⁹⁰ studies.⁹

6. A long-term study of facial growth and development, as related to the problem of malocclusion, was started in 1952 at Burlington. The three main aims of the project are: (1) to study the characteristics of maturational change in children; (2) to evaluate the relative efficacy of preventive-interceptive orthodontic therapy; and (3) to assess the role of heredity and environment in governing the growth of the cranio-facial complex. The interrelated signs of malocclusion, such as tooth size-arch length, are being studied by mathematical analysis. The material assembled from this study in the form of study casts, cephalometric radiographs, and case histories, constitutes one of the best collections in the world in the area of the physical growth and development of the cranio-facial complex. Some of this material has already been applied to the undergraduate and graduate teaching program of the Faculty of Dentistry.¹⁰

7. Using isotope (H^3 thymidine) labeling techniques, it was found that osteoblasts originate from the osteogenic cells and later become osteocytes. Osteoclasts of bone do not undergo mitosis and appear to be aggregates of osteocytes. Similarly, the role of the stratum intermedium cells in tooth development was studied, indicating that these cells are

relatively undifferentiated, and have the capacity to form cells of the stellate reticulum and preameloblasts.^{11,12}

8. The carbonate content of enamel was found to be inversely related to the fluoride levels. It is hypothesized that the mechanism by which fluorides reduce caries is related to the reduction of the solubilizing anions such as carbonates. Hence, fluorides and carbonates are important chemical determinants of tooth susceptibility to caries.¹³

9. (a) A method has been developed for the histochemical staining of tissue ribonucleic acid with improved specificity in that nucleic acids are differentiated from sulphate groups of polysaccharides. (b) Histological studies of normal gingiva indicate that plasma cells and associated cells of the lymphoid type in connective tissue are a constant finding in clinically normal gingiva of young primates, but are not found in the gingiva of dogs, rats or guinea pigs.¹⁵

The program combines basic and applied research with emphasis on the basic aspects. Applied research has as its objective some finding that can be put to a practical use. It does not as a rule initiate a step toward further research. On the other hand, motivation for basic research is scientific curiosity. Basic research initiates new concepts or modifies old ones and contributes to new variables in science. An example of applied research in the program of the Division of Dental Research is the study designed to evaluate the effectiveness of topical fluorides in reducing caries. On the other hand, a basic finding is that fluorides affect the concentration of carbonates in teeth—thus suggesting a possible mechanism of action by which fluorides reduce caries. The symbiosis between basic and applied research should continue undisturbed.

Funds for Research.—The total annual budget for the Division of Dental Re-

FIGURE 4 Histological preparation of hard and soft components of the oral tissues.



FIGURE 5 Biochemical analyses of the constituents of saliva and the dental tissues.

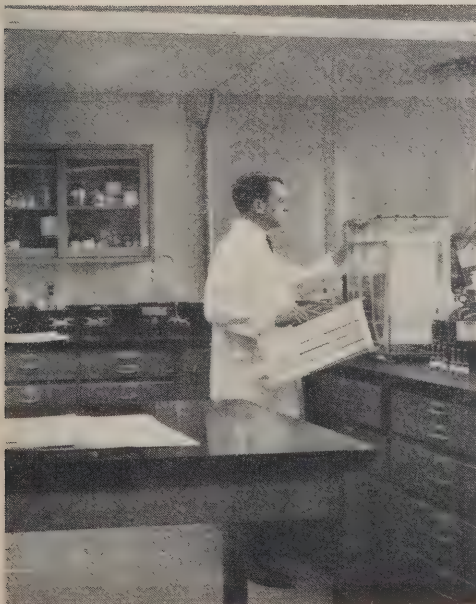


FIGURE 6 Paper chromatography, illustrated here, is an important method for analyses of complex chemical mixtures.

search is approximately \$75,000. This money is used for such items as equipment, animals, supplies, and salaries for technical personnel, but does not include salaries for academic personnel. The major sources of funds are the federal government, through the National Research Council of Canada and the National Health Grants (60 per cent), the Canadian Dental Association (2 per cent), the Division of Dental Research and the University (30 per cent), and the United States Public Health Service (8 per cent). While it is anticipated that these will continue to be major sources of funds in the future, some changes in the accepted pattern of support are needed. More assistance from private sources is desirable and should be forthcoming. Direct aid should be available to the University so that this institution may support more scientific research and graduate programs.

While there is no immediate shortage of funds for equipment, supplies, and technical personnel, there is a serious shortage of financial assistance for the training and subsequent support of academic staff. There are, at present, few staff members who may devote over 50 per cent of their time to research. Assistance along these lines in the form of institutional grants and research professorships would be most welcome. Also of great importance are summer undergraduate studentships which permit undergraduates to undertake research during summer months. This program has been of great value in stimulating the students' interest in research and graduate studies.

INCREASING RESEARCH POTENTIAL IN DENTISTRY

In a presentation such as this, some projection into the future is mandatory, albeit at the risk of gazing into a crystal ball. Investment in dental research in terms of money spent, and in terms of recruitment and favourable environment,

has lagged in proportion to its importance; hence, the rate of growth in this area in the next decade will obviously have to be greater than in the past. The fostering of more research in dental schools, in public health areas, and in hospitals is imperative if we are to expect improved services and better methods of prevention. Also, a dental school must emphasize research if it is to meet its responsibility to the university community. "A university must manifest a spirit of investigation, a search for new truth and a continuing program of research."¹⁶ It follows that each faculty must do the same if the university is to maintain its function as a place of unending inquiry. How may research in dental schools be improved and increased? A summary of general recommendations which are related to increasing the research potential in dental schools and particularly in the Division of Dental Research is as follows:

1. Singly, the most important recommendation designed to increase research potential is to increase the number of personnel trained and interested in basic and clinical research relating to dentistry. So important is this item that in the recent Survey of Dentistry in the United States, the Survey Commission stated that it believes the research potential of existing schools must be expanded before new schools are built, and that recruitment for dental research is even more important than recruitment for dental practice.¹⁷ Nothing short of a crash recruitment and training program, designed to stimulate and assist academically qualified students to undertake graduate studies for careers in teaching and research, will improve the present situation.

2. More programs should be initiated within dental schools to stimulate faculty interest in research, and to improve interest in scholarly pursuits.

3. As more trained personnel become available, financial support for research will have to be increased from federal sources and private individuals.

4. Some changes in the accepted pattern of support for research are desirable. The university should be in a position to support more scientific research and more graduate training. More direct aid to the university is essential.

5. There is a great need to establish research professorships in dental schools. The National Research Council associate-ships, recently approved, are an important step in this direction.

6. More clinical research, and more clinical teachers with training in research methods are required. The hospitals should play an important role in this area.

7. There is a need for a quicker implementation of published findings to the teaching and practice area.

8. Summer undergraduate research studentships should be expanded.

in dentistry, (c) formation of a Division of Dental Research and a subsequent campaign for funds to permit the purchase of equipment, building of laboratories and employment of staff, and (d) the construction of a new school which amply provides for research in the areas of histopathology-histochemistry, bacteriology, biochemistry, statistics, and nuclear biology.

4. Research has had a salutary effect on the didactic and clinical teaching program in the Faculty. In addition, the research program has encouraged a close, mutually beneficial liaison with other faculties and departments.

5. Research is the best assurance for vitality and growth in a teaching institution.

RÉSUMÉ

L'auteur décrit les progrès réalisés en recherches à la faculté de chirurgie dentaire de l'Université de Toronto. Les principales phases de l'établissement des recherches s'établissent comme suit:

(a) création de postes au sein des cours gradués pour aider des étudiants qualifiés au point de vue académique à poursuivre une carrière de professeur et de chercheur dans le domaine des sciences fondamentales; (b) intégration dans le corps professoral de personnel entraîné dans les sciences de base et en chirurgie dentaire; (c) formation d'un département de recherches dentaires et organisation d'une souscription pour l'achat de l'équipement nécessaire, la construction des laboratoires et l'embauchage du personnel; (d) construction d'une nouvelle école dentaire qui fournit amplement l'espace nécessaire aux recherches dans les sections d'histopathologie, histochimie, bactériologie, biochimie, statistiques et biologie nucléaire.

L'auteur termine son article en mentionnant l'effet salutaire exercé par la recherche sur le programme clinique et didactique de la faculté. Le programme de

SUMMARY AND CONCLUSIONS

1. In this report, an attempt was made to trace the development of research in the Faculty of Dentistry, University of Toronto, with emphasis on the period after 1950.

2. The key factors in the development of a program of research are first, a proper psychological climate whereby scholarly pursuits are encouraged and rewarded above all other endeavours, and second, a nucleus of research personnel trained in the basic sciences.

3. The main steps by which the plan to develop research evolved include the following: (a) establishment of graduate fellowships to assist academically qualified students to pursue a career of teaching and research in the basic sciences, (b) incorporation into the faculty of staff trained in the basic sciences and

recherches a, de plus, créé des relations bienfaisantes entre la faculté dentaire et les autres facultés et départements de l'Université. Les recherches constituent une source de vitalité et d'épanouissement pour une institution d'enseignement.

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ABSTRACTS

DISCOLOURATION OF TEETH POSSIBLY DUE TO ADMINISTRATION OF TETRACYCLINES: A PRELIMINARY REPORT

*Joan Weyman and J. Rennie Porteous.
Brit. D.J. 113:51, July 17, 1962.*

Recently seven children examined at the Sutherland Dental School and Hospital,

Newcastle-upon-Tyne, were found to have intrinsic discolouration of the teeth which proved, on further investigation, not to be cases of opalescent dentine which they resembled.

Zegarelli et al¹ previously reported that in an investigation of 52 children aged 9 months to 16 years, all suffering from fibrocystic disease of the pancreas, they noticed that 38 had discolouration of

the teeth of a grey-black or brown nature. They suggested that pending further investigation into other oral aspects of children with cystic fibrosis of the pancreas, it is possible that antibiotic therapy including tetracyclines could contribute to the discolouration.

One of the main points of importance brought out by the group of children here described is that out of seven with grey-brown teeth, 3 had no association with fibrocystic disease of the pancreas. These three had osteitis as infants, 2 in the maxilla and 1 in the mandible. As far as can be discovered all the previous cases reported have been in children with fibrocystic disease of the pancreas, but in the cases described here, the present authors feel in no doubt that the grey-brown discolouration occurring in both medical conditions is the same.

Another point shown by the group with grey-brown teeth is the apparent correlation between the time of the tetracycline dosage and the discolouration of those teeth developing at that time. Where tetracycline was administered from age 11 months onwards, none of the deciduous teeth was affected and the tips of the permanent incisors also escaped discolouration. Where tetracyclines were given during the first six months only, the deciduous teeth were found to be discoloured but none of the permanent erupted teeth were affected. It has been shown by Bevelander et al² and Boyne and Miller³ that tetracycline is incorporated into the calcified tissues as they are laid down, be this bone or tooth. Tetracycline has an affinity for some metals, calcium in particular, so that it is built-in during development. Tetracycline itself is a yellow substance and fluoresces yellow-gold. Two of the cases reported here had yellow teeth which fluoresced yellow-gold under ultra-violet light, and in one case the post mortem specimen of bone exhibited a similar effect.

A common factor in all these cases of discolouration, yellow or brown, is the administration of tetracycline drugs during

the formative period of the teeth, while there appears to be no correlation between the medical histories of the patients. Since tetracycline fluoresces golden-yellow with ultra-violet light, and this has been shown to occur in the two cases with yellow pigmentation, it would appear with tetracycline is present in these teeth.

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INFLUENCE OF ORTHODONTIC APPLIANCES ON CARIES FREQUENCY

Bengt Ingervall. Odont. Revy 13:175, No. 2, 1962.

A question of great importance in orthodontic treatment is whether the appliance contributes to an increase in caries frequency.

Noyes (1936) investigated one hundred patients who had undergone orthodontic treatment and found that the treatment had not caused an increase in caries frequency. Nor could Dolce (1950) find that orthodontic treatment resulted in an "alarming" increase in caries frequency. Burrill (1941) expressed the belief that patients with a previously relatively high level of caries activity showed decreased caries activity after the institution of orthodontic treatment as a result of increased supervision of mouth hygiene. Owen (1949) found that the number of lactobacilli increased following the placement of an orthodontic appliance. Furthermore, the increase in the number of lactobacilli was dependent upon how many teeth were banded and the length of time the bands had been in the mouth.

In summary, the question as to whether orthodontic treatment results in an increased caries risk has been investigated either through investigation of caries frequency following orthodontic treatment (Noyes and Dolce), or through study of caries activity during treatment by chemical and bacteriological test methods (Burrill and Owen). The results of these investigations are contradictory. Therefore, the author conducted the present investigation of the effects of fixed appliances upon caries frequency. A comparison was made of differences in caries frequency among 60 children who had received treatment with fixed orthodontic appliances and 60 children in a control group.

Caries experience was measured with the aid of a mirror and explorer, and was supplemented with intraoral radiographs of the buccal segments and the maxillary anterior teeth. Pre-carious lesions and radiographic evidence of caries were recorded in addition to macroscopic defects.

The investigation revealed that caries frequency was higher among those chil-

dren who had received orthodontic treatment. The increase in caries frequency was statistically significant at the 5 per cent level. If pre-carious lesions were excluded, the caries increase was smaller and not of statistical significance.

The distribution of carious lesions is influenced by orthodontic appliances. Full bands appear to protect the tooth from caries. Bands which do not cover the gingival third of the buccal surface, such as are used in front teeth, protect against interproximal caries but give rise to an increase in caries of the buccal surfaces. Maxillary incisors which have been fitted with bands have an increased frequency of carious lingual surfaces.

The author recommends that the teeth undergo topical fluoride treatment before insertion of the orthodontic appliance. The patient should treat himself at home by rinsing with a fluoridated mouth wash. In patients with an originally high caries frequency, it is advisable that the front teeth also be fitted with full bands. To avoid decalcification under loosened bands it is important to ascertain at each visit that all bands are well cemented.

C.D.A. Art and Flower Exhibit • Dentists, members of their immediate families and their employees are invited to submit flower displays, oil paintings, sketches, pastels, sculpture, ceramics, pottery, shell craft, leathercraft, woodwork, miniature castings, photographic enlargements, transparencies or any other handiwork in the arts and crafts for display at the Art and Flower Exhibit of the forthcoming annual convention of the Canadian Dental Association at Toronto, May 19-22, 1963. Additional information may be obtained from Dr. J. G. Dale, Canadian Dental Association headquarters, 234 St. George Street, Toronto 5, Ontario.

Board of Governors • The Board of Governors of the Canadian Dental Association is composed of members selected by dental organizations in all ten provinces. The Board meets annually just before the national convention of the Association. Any member of the Canadian Dental Association may participate in the Board's annual meeting. Canadian dentists are urged to avail themselves of this opportunity to participate in the affairs of their profession.

EDITORIALS

On the Abolition of University Fees

The Canadian Dental Association has recommended to the Royal Commission on Health Services that university fees be gradually lowered and ultimately abolished. This is one of several measures designed to increase the supply of dental personnel in Canada. This action comes at a time when there is a critical shortage of dental personnel in this country and when the profession is making very determined efforts to encourage suitably qualified secondary school students to pursue careers in dentistry.

Information recently submitted to the Royal Commission graphically illustrates the high cost of dental education. University expenses, including tuition and incidental fees, text books and supplies, cost the dental student on the average \$3,600 for his four-year dental course. Room and board expenses vary considerably depending upon the location of the school and whether there is a student residence. They average \$3,000 for the four years. Predental tuition and living expenses also vary according to the school and the number of years of predental education required. The average cost of predental education is another \$1,900. Disregarding transportation, clothing, health care and other personal expenditures, the combined average cost for both predental and dental years is \$8,500.

This makes dentistry one of the most expensive university courses. In fact, dental education is more costly than any other area of higher education, with the exception of the medical curriculum. This high cost constitutes an effective deterrent for a substantial number of interested secondary school students. By restricting the study of dentistry to young men and women from families of medium or high-income levels, it also limits the pool from which potential dental students may be drawn. This, in turn, produces geographic repercussions, manifested by the low proportion of students from rural areas in our dental schools. Experience has shown that students from smaller communities have a greater tendency to settle in rural areas than do students from larger centres. On the other hand, family income tends to be lower in rural than in urban areas, and this undoubtedly hinders many capable rural students from acquiring a dental education. The economic barrier thus deprives rural communities, which have the most urgent need for resident dental practitioners, of their most profitable source of personnel.

Obviously, the most highly qualified students must be encouraged to enter our dental schools in adequate numbers. The sole criteria for university entrance should be ability and academic achieve-

ment. There must be no economic barrier for students who have the ability and the desire for careers in dentistry.

Although university education is heavily subsidized, students are still saddled with fees which for some are prohibitive. We have long ago recognized the importance to society of making elementary and secondary school education freely available to every child. There seems to be no logical reason why education should be free at the elementary and secondary school level but not for university students.

With the removal of the economic barrier to higher education, more students

would be encouraged to apply for university admission. The complete disappearance of fees, however, would deprive the dental schools at their present capacity of \$700,000 annually. This amount must be replaced somehow, and the Canadian Dental Association has therefore urged that the federal government increase its annual per capita grants sufficiently to permit the universities to reduce fees.

REFERENCES

1. A Brief Submitted to the Royal Commission on Health Services by the Canadian Dental Association, Appendix XVIII-1, March 1962.

International Uniformity in Dental Statistics

There has recently been published a report of the World Health Organization's Expert Committee on the subject of "Standardization of Reporting of Dental Diseases and Conditions."¹ Modestly clothed in a plain grey cover with green lettering, this report represents an important milestone in progress toward international standardization of dental statistics.

The need for uniformity in other fields of health statistics was recognized long ago and resulted in the "International Statistical Classification of Diseases, Injuries and Causes of Death." With the upsurge of interest in dental public health, it became equally desirable to establish similar international standards upon which surveys could be based for the planning and evaluation of dental programs and for dental epidemiological studies.

It is readily acknowledged that a very considerable volume of information relative to the factors that influence the occurrence and distribution of dental dis-

orders in aggregations of individuals has been contributed over the years by many talented investigators. Much of this information, however, cannot be put to use because few of the results are comparable, owing to differences in terminology and diagnostic criteria and to the varying methods employed in examinations and in the recording and reporting of data.

Motivated by a commendable desire to do work that urgently needed doing, the Fédération Dentaire Internationale some time ago established a Special Commission on Oral and Dental Statistics to bring some order out of chaos. The task of this special commission was to establish (1) general principles for the international standardization of dental caries statistics and (2) uniform terminology of periodontal diseases and dental anomalies. This able group was led by Professor L.-J. Baume of the University of Geneva, Switzerland. Canada was represented by Dr. R. M. Grainger of the University of Toronto. Concentrating its early efforts on dental caries statistics, this commis-

sion circulated no less than fifteen drafts of its proposals over a period of five years before submitting recommendations to the F.D.I. All told, more than two hundred other persons in every part of the world contributed to this enterprise. Such is the immensity of a task on an international scale. At the 1961 annual session in Helsinki, the general assembly of the F.D.I. adopted the first three chapters on classification, terminology and description of study of the "General Principles Concerning the International Standardization of Dental Caries Statistics."² The remaining four chapters are now in preparation. They will cover directives for collecting and recording data, sampling procedures, processing and evaluation of data, and the reporting and presentation of results.

But alas, not every country is represented on the F.D.I. It is fortunate, therefore, that the World Health Organization recently took an interest in the subject by calling together an expert committee. This committee was asked to discuss the standardization of indexing and reporting of dental diseases and conditions and to formulate standards which would be generally acceptable to all countries and so would bring about uniformity and international comparability in dental health statistics. The committee met in Geneva, November 14-20, 1961. Its members were Mme. A. Chaput (France); A. I. Darling (United Kingdom); G. N. Davies (New Zealand); R. M. Grainger (Canada); S. Sweilim (Egypt); D. F. Rudko, vice-chairman (U.S.S.R.); J. W. Knutson, chairman (U.S.A.); L.-J. Baume, consultant (Switzerland); and F. B. Rice, secretary (W.H.O.). The close collaboration between the F.D.I. special commission and the W.H.O. expert committee is reflected by Dr. Grainger's and Professor Baume's presence in both groups.

Standard definitions of dental diseases and conditions are essential to the study of problems in dental health. In the past, comparison of data from different areas has failed because dentists in various localities placed different interpretations on such definitions. In view of this, and

because the F.D.I. special commission was already concerned with terminology, the W.H.O. expert committee confined itself to those dental diseases and conditions which readily yield objective, quantitative and reproducible measurements. Included in this group are dental caries, gingival inflammation, periodontal pockets, calculus, handicapping dentofacial deformities (cleft lip, cleft palate, prognathism, retrognathism, deep overbite, open bite, crowding, spacing, etc.), and need for dental prosthesis. Also set forth were the principles of planning surveys and recording data. With respect to the preparation of survey reports, the expert committee recommended general adherence to the recommendations advanced by the F.D.I. Special Commission on Oral and Dental Statistics² and the United Nations Subcommission on Sampling.³

The significance of these developments will not be lost to Canadian dentists. This country holds membership in the World Health Organization and the Canadian Dental Association is a member of the F.D.I. Thus there are strong moral as well as compelling practical reasons for Canadian collaboration in a world-wide effort to bring uniformity and international comparability to dental health statistics. As it happens, the methodology of the Canadian Dental Health Index initiated by the Canadian Dental Association is readily adaptable to international standards, with but minor modification. Canadian dentistry can thus stand shoulder to shoulder with her world partners and thereby more effectively explore new avenues for the eventual eradication of dental disorders.

REFERENCES

1. World Health Organization. Standardization and reporting of dental diseases and conditions. Report of an Expert Committee on Dental Health. *Wld. Hlth. Org. Techn. Rep. Series No. 242*, 1962.
2. Fédération Dentaire Internationale. Special Commission on Oral and Dental Statistics. General principles concerning the international standardization of dental caries statistics. *Internat. D.J.* 12:65, March 1962.
3. United Nations Subcommission on Sampling. The preparation of sampling survey reports. New York, United Nations Statistical Papers, Series C, No. 1, 1959.

BUREAUX, COMMITTEES AND COUNCILS

Announcement: Canadian Dental Association Pension and Insurance Plans

Trustees of C.D.A. Pension and Insurance Plans

As from October 1, 1962, the London Assurance replaces the Beacon Insurance Company Limited as the underwriters of life and pension-assurance contracts effected after that date under the plans recommended by the Canadian Dental Association.

The London Assurance which is a well established and highly regarded company was incorporated by Royal Charter in 1720 and has been writing life assurance business for 240 years. The London Assurance is widely known in Canada, where it has operated for one-hundred years.

As the 'Beacon' is a member of the London Assurance group of companies, it may no longer, in accordance with Canadian law, underwrite new life assurances, since the law permits only one member of the same group to do so.

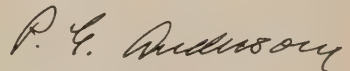
The existing contracts which have been issued by the 'Beacon' will not be affected by the change. The 'Beacon's' assets in respect of such contracts will, of course, continue to be maintained fully in Canada in order to fulfill the obligations of the company. Those assets will remain under the supervision of the Department of Insurance in Ottawa.

The administration office at 2249 Yonge Street, Toronto 7, Ontario, remains unchanged under the management of Mr. J. T. Staddon, who has administered and supervised our plans for the past seven years.

The same advantageous terms for life assurance and guaranteed pension policies which members have enjoyed with the 'Beacon' will be continued with the parent organization and these arrangements will result in even better service for members.



R. P. Lowery, D.D.S.,
Trustee



P. G. Anderson, D.D.S.,
Trustee

DENTISTRY IN THE NEWS

The Association

NATIONAL RECRUITMENT COMMITTEE MEETS

The Canadian Dental Association's National Recruitment Committee met at Association headquarters in Toronto on October 1. Present were R. G. Ellis of Toronto; J.-P. Lussier of Montreal; R. R. MacIntyre of Calgary; C. Pierce, representing the Canadian Section of the American Dental Trade Association; G. Ratté of Quebec City; D. C. Steeves of Moncton; H. K. Brown of the Department of National Health and Welfare; W. J. Dunn of Toronto, chairman; Don W. Gullett, Canadian Dental Association secretary; as well as other Association staff members. Formed following the 1960 annual meeting of the Canadian Dental Association, the National Recruitment Committee first met early in 1961. The Committee is a subcommittee of the Council on Education and its chairman reports regularly to that council.

Subjects included on the agenda covered: results of the survey of dentists' attitude toward recruitment, recent trends in applications for admission to dental schools, reports of provincial recruitment committees, the "dentistry page" in *Canadian High News*, dental participation in science fairs, establishment of the Canadian Fund for Dental Education, university entrance scholarships and government bursaries, and the recruitment of dental hygienists.

Although there has been an increase in the number of applicants for undergraduate courses in dentistry and dental hygiene, the committee felt that recruitment efforts must not be relaxed at this time. Some members were of the opinion that placement of dentists should be considered in conjunction to recruitment, and a subcommittee comprising Mrs. B. I. Brown, director of the Bureau of Economic Research, with G. T. Mitton and H. K. Brown as consultants, was appointed to assess a possible study of the factors necessary to support dental practice. The Council on Education will also be asked to broaden the National Recruitment Committee's terms

of reference to include placement of dentists.

The value of the "dentistry page" in the annual careers issue of *Canadian High News* during the past five years was confirmed. The Committee will press for a continuation of this project in future years.

Concern was expressed over the paucity of university entrance scholarships in dentistry. Dean R. G. Ellis explained that these scholarships are publicized on secondary school notice boards and elsewhere, thereby constituting a powerful recruitment incentive. He urged that provincial dental organizations be encouraged to create additional admission scholarships comparable to those sponsored by the Dental Alumni Association and Royal College of Dental Surgeons of Ontario at the University of Toronto.

A new recruitment motion picture, "Challenge of Dentistry," which has been made available through the courtesy of the American Fund for Dental Education, was viewed by the Committee. This film will be publicized to provincial recruitment committees and further distribution will be effected through other channels to television stations, schools, guidance and vocational groups, etc.

The Committee also reviewed available recruitment resource material. A new colour film strip and companion pamphlet, "It's a Good Life" designed for recruitment is in production. Also to be prepared is a pamphlet to be directed to every dentist asking his support for recruitment.

H. W. REID HONOURED BY AMERICAN DENTAL ASSOCIATION

A rare distinction, previously only given to one other Canadian dentist, was conferred on Harvey W. Reid of Toronto, a past president of the Canadian Dental Association, when he was made an honorary member of the American Dental Association at that association's recent annual session in Miami Beach, Florida.

Born in Varna, Ontario, Dr. Reid received his early education in Clinton, Ontario and graduated in dentistry from the University of Toronto in 1917. Following military service

in the Canadian Dental Corps between 1917 and 1920, Dr. Reid established a practice in Toronto. He was president of the Toronto Academy of Dentistry, 1936-37. He served on the Board of Governors of the Canadian Dental Association for ten years and was named president of the Association for the year 1945-1946. A member of the Board of Directors of the Royal College of Dental Surgeons of Ontario for twelve years, Dr. Reid served as president of the College for the two-year term, 1947-49. Dr. Reid is a member of the Senate of the University of Toronto. In 1949 he received an honorary fellowship in Dental Surgery from the Royal College of Surgeons of England. He is a fellow of the American College of Dentists and an honorary member of the Toronto Academy of Dentistry.

Dr. Reid has been active for many years on various committees of dental organizations, most notably the former Health Insurance Studies Committee (now Dental Services Committee) of the Canadian Dental Association.

Dr. Reid resides in Toronto where he conducts a busy general dental practice.



H. W. Reid

Canada and the Provinces

ALBERTA

Plan Courses for Dental Assistants, Technicians and Mechanics. — Representatives from the Dental Assistants' Training Committee of the Alberta Dental Association, the Board of Registered Dental Technicians and the Board of Certified Dental Mechanics recently met with the Deputy Minister of Education and the principal of the School

of Technology to discuss and plan courses of training for dental assistants, dental technicians and dental mechanics in the School of Technology and under the Department of Education. Space has been assured in the School of Technology at Edmonton and if plans materialize, it is hoped that courses of training will commence in September 1963.

Lethbridge and District Dental Society.—Newly elected officers were installed at the annual meeting of the Lethbridge and District Dental Society held on September 18, 1962. They are: E. J. Steed, president; George Sakamoto, past president; Arthur Garner, vice-president and R. D. Lamb, secretary-treasurer. The society will continue the dental assistants' training program sponsored by the Alberta Dental Association. It was also unanimously decided to promote fluoridation by every possible method at the profession's disposal during the coming year. V. E. Christou of Lethbridge was appointed chairman of the society's fluoridation committee.

BRITISH COLUMBIA

British Columbia Dental Association.—Public-participation programs in which questions are telephoned to a panel of two dentists have been broadcast by Vancouver radio station CKLG each Monday for the past four months. The broadcasts which are a project of the public relations committee have been so successful that the sponsors wish them to be continued indefinitely.

Fraser Valley Dental Society.—The first meeting of the year was held in Chilliwack on September 13. R. G. Donaldson of Chilliwack was elected president to follow A. H. Patterson of Abbotsford, and G. J. Hutton was chosen secretary-treasurer. Representative to the British Columbia Dental Association executive is A. A. Miller.

The guest speaker was George Gibson, M.D. who gave an enlightening talk on his experiences in Russia while recently attending the International Cancer Congress in Moscow.

Upper Island Dental Society.—The first fall meeting was held on September 12 at the Central Vancouver Island Health Unit in Nanaimo. J. F. Reid of Vancouver who is a graduate in both pharmacy and dentistry addressed the dentists and their assistants on "Pharmaceutical Aids in Dentistry." On the

same day members of the society addressed a public meeting of parents on preventive dental measures.

NEW BRUNSWICK

Emergency Dental Service Appreciated.—A recent editorial in the *Moncton Transcript* praised the dentists of that New Brunswick city for establishing a weekend emergency dental service during the past summer:

"Once again this summer, as has been the case for some years now, the Moncton Dental Society has placed in operation a 'weekend emergency dental service,' effective June 1 and continuing until September 1. According to a 'Professional Notice' inserted in this newspaper by the society, in the form of an advertisement, all any resident of Moncton in need of emergency dental care on any weekend between these dates has to do is to dial a certain telephone number (382-8387) and arrangements then will be made for his or her needs to be attended to.

"This is a set-up for which the members of the dental society are deserving of the highest commendation of the citizens generally, to say nothing of the sincere gratitude of individual beneficiaries thereof. Under the plan, one member of the society remains on call continually throughout the whole weekend. Various local dentists take turns in such a way as to result in each one performing this function once during the summer season.

"The dental society is performing a very high type of public service in carrying out this arrangement from year to year."

NEWFOUNDLAND

Newfoundland Dental Society.—Twenty-one members of the Newfoundland Dental Society from St. John's, Grand Falls, Corner Brook, Carbonear, Bell Island and Gander were guests at the United States Naval Station at Argentia on June 7. The station's dental department presented a program of lectures and clinical demonstrations, including a tour of the naval station and the naval air squadron stationed there. From this base, radar equipped patrol aircraft maintain reconnaissance of the air space east of Greenland as part of the distant early warning system (Dewline).

The scientific program included the following topics: Oral Surgery and the Maxillary Sinus; Transplantation: Case Presentation; Replantation: Case Presentation; and Full Denture Technique with Special Emphasis on Peripheral Adjustment and Equilibration at the Time of Insertion.

The visiting dentists lunched at the bachelor officers' quarters and, following the afternoon program, were entertained at the officers' club for dinner.

QUEBEC

College of Dental Surgeons of the Province of Quebec.—Forty-eight new graduates from the dental schools at McGill University and the Université de Montréal received their licences to practise at a ceremony held at the Université de Montréal on May 26, 1962. Present at the head table were: Rémy Langlois, president of the College; R. T. Lamb representing the Faculty of Dentistry, McGill University; Paul Geoffrion representing the Faculty of Dental Surgery, Université de Montréal; Henri Brouillet, first vice-president of the College; George Zimmerman, governor of the College; and R. M. LeBlanc, registrar.

Dr. Langlois and Dr. Zimmerman congratulated the new licentiates and welcomed them as new members of the College. The registrar administered the professional oath to the new licentiates who received their licences from the president.

Montreal Dental Club.—A former associate professor of Denture Prosthesis at McGill University addressed the first meeting of the Fall session of the Montreal Dental Club on September 17, 1962 at the Queen Elizabeth Hotel. Donald Kepron selected "The Pankey-Mann Technique" for his topic. Commencing with a short résumé of the theories of occlusion which are incorporated in the technique, Dr. Kepron described the P-M instrument as a type of surveyor that helps to determine the best occlusal curve for the lower posterior teeth. Using a functionally generated path record, the upper teeth are then shaped in harmony with the lower teeth, allowing freedom in cases of centric occlusion where there is no locking of the occlusion, absence of contact in balanced occlusion and functional movements guided by the cuspids. Dr. Kepron stressed the fact that these principles, particularly the functionally generated path record, should be used in many types of prosthodontic work and not only in full-mouth reconstruction.

Mount Royal Dental Society.—L. A. Cohn of New York City, associate clinical professor of Dentistry at Columbia University and clinical professor of Prosthetics at Tufts University, Boston, addressed the opening meeting of the Mount Royal Dental Society for the 1962-63 season on September 21, 1962.

The meeting was held in the amphitheatre of the Montreal General Hospital.

Discussing the principles of "Oral Rehabilitation" the speaker emphasized the importance of considering all components of the dento-facial complex, such as the tongue, muscles of mastication, vertical dimension and temporomandibular joint, as well as the general physical and mental health of the patient. Also stressed was the importance of the function of the centric relationship. Factors to be taken into consideration when considering oral rehabilitation are: (1) present and future needs of the patient, (2) aesthetic and phonetic compatibility of existing teeth, and (3) prognosis.

SASKATCHEWAN

Annual Convention of the College of Dental Surgeons of Saskatchewan.—Approximately sixty members of the College were present in Waskesiu, August 27-29, for the annual convention, along with visitors from Alberta, Manitoba and the State of Minnesota. Dean H. R. McLean of the Faculty of Dentistry, University of Alberta and Dean J. W. Neilson of the Faculty of Dentistry, University of Manitoba were among these visitors.

The essayists included H. Jankelson of Seattle, Washington who spoke on complete denture prosthodontics, B. S. Bookhalter of Regina who chose "Office Management and Patient-Dentist Relationship" for his topic, and J. J. Schachter of Saskatoon who described his recent visit to New Zealand as member of a Saskatchewan group studying the New Zealand Dental Nurse programs.

The program was arranged by the Prince Albert Dental Society.

Profession-sponsored Insurance Plans Mitigate Medicare Crisis.—"Saskatchewan physicians might have lost control of the practice of medicine to politicians if it had not been for the previous existence of physician-controlled medical insurance plans." This statement was recently made by Dr. Alvin Buckwold, a member of the public relations committee of the Saskatchewan College of Physicians and Surgeons. Commenting on this statement, a recent editorial in the *Washington State Dental Association Newsletter* made the following observations:

"What does this prove? Does it prove that Saskatchewan physicians prepared their own defeat beforehand by supporting the medical service set up? Or does it prove that you can't beat something with nothing? Draw your own conclusions."

International Items

CANADIANS ATTEND FIRST INTERNATIONAL CONFERENCE ON ORAL SURGERY

F. A. Smith of Vancouver, president of the Canadian Society of Oral Surgeons, was one of several Canadian dentists who attended the First International Conference on Oral Surgery at the Royal College of Surgeons of England in London, July 1-4, 1962. More than



Terence Ward (l.) of London, England, chairman of the First International Conference on Oral Surgery, L. O. Bishop, president of the American Society of Oral Surgeons, and F. A. Smith (r.), of Vancouver, president of the Canadian Society of Oral Surgeons examine a wall plaque at the Queen Victoria Hospital, East Grinstead, Sussex, England. The building and equipment were presented by American donors through the British War Relief Society of the United States of America.

800 delegates from six continents were in attendance.

The conference was opened by the president of the Royal College of Surgeons of England, Sir Arthur Porritt. In addition to the scientific program, visits were made to oral surgery departments in various hospitals located in and near London. On July 3 a formal banquet was held at the Guildhall. Guests of honour included the Lord Mayor and Lady Mayoress of the City of London, the United Kingdom Minister of Health and the American Ambassador to Great Britain.

UNITED STATES

Dental Insurance Grows.—Dental insurance is likely to boom in the United States, the magazine *Medical Economics* reported recently. By next year, Blue Shield-type dental prepayment plans will be available to patients in twenty states, the magazine learned from an American Dental Association spokesman. Four plans are already in operation and 16 more are being organized. They will cover areas in which 66 per cent of the nation's dentists practise.

WORLD HEALTH ORGANIZATION

World Shortage of Dentists.—Ideally there should be one dentist to every 1,000 of the population, according to the *R.S.H. Group Bulletin*, published by Britain's Royal Society of Health. That this ideal is far from realized is shown by figures (a sample of which is given below) published by the World Health Organization in their *World Directory of Dental Schools*. The current situation is worsened by the fact that the increase in the growth of population is greater than the current expansion of training facilities.

Dentist-population ratios in seven foreign countries.

Country	Population per dentist
Indonesia	283,700
India	108,000
Soviet Union	5,100
United Kingdom	3,900
France	2,700
United States	1,700
Israel	1,400

Canadian Dental Schools

McGILL UNIVERSITY

Appoint New Head of Paedodontics.—Gerard Weinlander has assumed the post of assistant professor and chairman of the Department of Paedodontics at McGill University. Dr. Weinlander is a native of Austria and holds the degree of Master of Business Administration from the University of Vienna. He graduated in dentistry from McGill University in 1961 and completed one year of postgraduate study in paedodontics at the University of Michigan, prior to assuming his present appointment.

UNIVERSITY OF TORONTO

New Director of Dental Hygiene.—Marjorie Jackson, associate professor of Dentistry at the University of Toronto, has been appointed director of training in Dental Hygiene at that university. Dr. Jackson is well known as a teacher, lecturer and paedodontist. She has also been active in research and in public health, taking part in topical fluoride research and serving on the Dental Public Health Committee of the Ontario Dental Association and on the Council on Public Health of the Canadian Dental Association.

Before entering the undergraduate dental course, Dr. Jackson completed the former diploma course for dental nurses at the University of Toronto and served briefly as a dental nurse in the university dental clinic. Following graduation in dentistry, she established a private practice limited to children. In 1959 she accepted a full-time appointment on the teaching staff of the Department of Paedodontics, University of Toronto.

Dr. Jackson is a past president of the Dental Nurses Alumnae Association, and of the Association of Women Dentists of Ontario. She is a member of the Board of Governors of the Ontario Dental Association, and a member of Omicron Kappa Upsilon honour dental society.

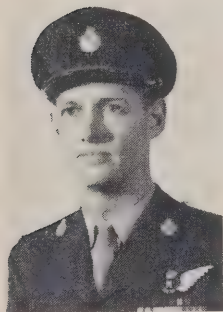
New Staff Promotions.—The following appointments and promotions in the Faculty of Dentistry, University of Toronto were recently announced by the President, Claude Bissell: D. G. Woodside, professor (Department of Orthodontics); A. M. Hunt, associate professor; W. D. MacKay, associate professor (Department of Prosthodontics); and G. A. Morgan, assistant professor.

Royal Canadian Dental Corps

PROMOTIONS

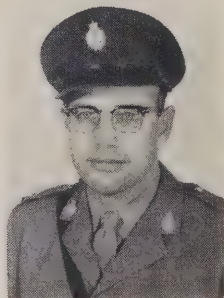
Army Headquarters announced recently the promotion of Major W. R. Thompson to the rank of lieutenant-colonel and of Captain H. G. Bunston to major.

Lt.-Col. Thompson was raised in Campbellford, Ontario and served in the Canadian Army and the Royal Canadian Air Force during the second world war. On his release from the armed forces he entered the University of Toronto and graduated in dentistry in 1949. Since that time he has served with the Royal Canadian Dental Corps on various postings in this country and abroad, and is at present on the staff of the R.C.D.C. School, Camp Borden. Lt.-Col. Thompson is married and has three children.



Lt.-Col. W. R. Thompson

Maj. H. G. Bunston



Major Bunston, who is at present stationed at H.M.C.S. "Shearwater" Dartmouth, N.S., served during wartime with the Royal Canadian Air Force in Canada and overseas. He studied dentistry at McGill University and graduated in 1952. Major Bunston has had postings to various Navy, Army and R.C.A.F. establishments in Canada, and to No. 35 Field Dental Unit in France. He is married, and has three children.

LT.-COL. SMITH RETIRES

Lt.-Col. A. R. Smith, the senior dental officer at R.C.A.F. Station St. Jean since 1958, has been retired from the Canadian Army (Regular) following service which dates from his first enrolment in 1940. Lt.-Col. Smith is a graduate of the Faculty of Dentistry, Dalhousie University. He served with the Canadian Dental Corps until his release in October 1945. His post-war service dates from October 1947 and has taken him to Korea and to various Navy and Air Force postings in the Maritimes and Quebec. Lt.-Col. Smith has returned to his home province of Prince Edward Island with his wife and four children where he will continue to serve the Corps as a call-out from the Canadian Army (Militia).

LT.-COL. THOMPSON LECTURES AT E.O.D.A. MEETING

Lt.-Col. W. R. Thompson, instructor in Oral Surgery at the R.C.D.C. School, Camp Borden, presented a paper entitled "Complications in Exodontia and Minor Oral Surgery—Prevention and Management" at the Eastern Ontario Dental Association Convention at Ottawa, September 23-25, 1962.

UNDERGRADUATE AWARDS PRESENTED AT R.C.D.C. SCHOOL

Undergraduate dental students subsidized by the Department of National Defence are required to attend practical phase training each summer to prepare them for their service as dental officers. During each of these periods of training, awards are made to the candidates achieving the highest standards of excellence. The following awards were presented for the 1962 training program:

2/Lt. C. M. Mason of the University of Alberta won the Honour Cadet Trophy for Phase Three;

2/Lt. J. M. M. Houde of the Université de Montréal and O/Cdt. R. T. Mori of the University of Alberta were joint winners of the Chief Instructor's Trophy, awarded for clinical proficiency during third phase training;

O/Cdt. H. Griesbach of the University of Toronto received the Honour Cadet Trophy for Phase Two; and

O/Cdt. I. C. Wambara of the University of Toronto was awarded the Honour Cadet Trophy for Phase One.

Public Health

ROYAL LEE SENTENCED

Royal Lee, president of the Vitamin Products Company of Milwaukee, U.S.A., has been sentenced to a one-year suspended prison term with three years' probation by a federal court. The United States Food and Drug Administration said he was found guilty of distributing over 115 special dietary products advanced by false claims for treating more than 500 different diseases and conditions. Lee also has attacked such well-recognized public health measures as water fluoridation, milk pasteurization and vaccination through his Foundation for Nutritional Research.

PERSONNEL CHANGES IN FIVE PROVINCES

Alberta.—W. G. Tym has resigned as dental health officer of the Mount View Health Unit, Alberta in order to return to full-time private practice. T. D. Finnigan, a 1962 University of Alberta graduate, has been appointed dental health officer to the Stony Plain-Lac Ste. Anne Health Unit. V. E. Potter, dental health officer of the Sturgeon Health Unit, is enrolled in the postgraduate course in Dental Public Health at the University of Toronto, 1962-63.

British Columbia.—Five dental externs have been appointed to serve in visiting community preventive dental programs within the public health service of the province of British Columbia. They are: R. S. Valentini, R. E. Hislop and G. Beber, all graduates of the University of Toronto; R. Thordarson from the University of Manitoba; and N. L. Goring, from McGill University, Montreal. Over sixty communities in British Columbia without the services of a resident dentist will benefit from the visits of dental externs.

H. A. Grimsrud, former regional dental consultant for the Kootenays, is enrolled in the postgraduate course in dental public health at the University of Toronto, 1962-63.

Manitoba.—W. C. King, who recently completed the postgraduate course in dental public health at the University of Toronto, has been appointed regional dental director for western and central Manitoba. His office is located at Brandon.

Prince Edward Island.—Three dental hygienists have accepted appointments with the dental division of the Prince Edward Island Department of Health. They are Gloria MacKinnon and Nellie Andrew, two 1962 graduates of the course in dental hygiene at the University of Toronto. The third is Jean MacLean who was formerly employed in Prince Edward Island and in Alberta.

Newfoundland.—D. Chaytor, a recent graduate from Dalhousie University has returned to the Grand Bank area of Newfoundland where he is giving part-time service to the Newfoundland Department of Health.

Research

W. B. SAUNDERS COMPANY ANNOUNCES \$15,000 WRITING FELLOWSHIP GRANT

To mark its 75th Anniversary in 1963, the W. B. Saunders Company, medical and scientific publishers, are making available \$15,000 for an unusual medical writing award. A distinguished committee will select the grantee. The purpose of this grant is to provide financially for a year's leave of absence for a distinguished investigator who:

1. Has been doing fruitful and significantly important biomedical laboratory research over the past several years.
2. Would like to have time for thought and for preparation of his work in monographic form.

The recipient of the award will not have to agree to publish his monograph with the Saunders Company and will be free to write, instead of a book, a series of journal articles reviewing his research.

Areas of research in the medical sciences and clinical medicine which are acceptable for award consideration are extremely broad with a preference for those which could be translated into clinical usefulness within the foreseeable future. The investigator should be a resident of the Americas; but he may be doing or have done his laboratory work outside the western hemisphere.

Applications for the Saunders Writing Award may be submitted in an informal style to the chairman of the selection committee. The investigator should indicate briefly the character of his research and where it has been pursued, along with a short résumé of his scientific background and a bibliography of his important papers. Various members of the committee who will re-

view applications will be persons most likely to be knowledgeable about both the applicant and the nature of his work.

Applications should be submitted between January 1 and May 1, 1963 directly to Dr. Robert F. Loeb, care of W. B. Saunders

Company, West Washington Square, Philadelphia 5, Pa. A decision on the award-winner will be reached by August 1, 1963, and the recipient notified. Formal presentation will be made at an award dinner in October 1963.

BOOK REVIEWS

SYNOPSIS OF ORAL HISTOLOGY

S. N. Bhaskar. St. Louis, C. V. Mosby Co., 1962. 295 p. Illus. \$7.75

A current bibliography is mandatory for any book intended to review a subject that is changing as rapidly as oral histology. Unfortunately, with the exception of reference to four articles and three texts, the author refers only to articles dated 1956 or earlier.

The division of the subject matter into Embryology (Part 1), and Oral Histology (Part 2) is well planned, and the chapter contents follow a logical sequence.

The drawings illustrating growth of the head and face are well planned and instructive, particularly Figures 9, 14 and 15. The sketches of Meckel's cartilage and the developing mandible (Figures 20 and 21) are very helpful in illustrating a difficult concept.

There are an adequate number of illustrations and they generally have been well chosen. Unfortunately many of the photomicrographs are too black and/or lacking in detail, particularly Figures 18, 24a, 33c, 36, 49a, 65, 94, 103, 111, 112, 123, 126, 131, 137, 142, 146, 147, 148, 149, 151, 163, 191, 208, 209, 226, and 229. Note should have been made of the magnification of the photomicrographs as well as the stains used in the sections.

Although the chapters on bone tissue and glands of the oral cavity are well done, the book is particularly weak on two important subjects, namely, enamel and dentine. An out-moded concept of enamel maturation as illustrated by Figure 42 is particularly no-

ticeable, and both chapters suffer from the lack of reference to more recent work done with the electron microscope.

There is a lack of reference in these chapters as well as in the text as a whole, to work done outside the United States. The discussion of eruption is logical and well done, but the comparison of eruption to sutural bone growth is highly debatable, when totally different theories are prominent in the literature and not mentioned.

With text books becoming ever more expensive and overly large, the author should be commended in reversing this trend.

The reviewer doubts that an oral histology text will be used at any time by general practitioners. However, this text could be used by serious students as a basis for discussion and as an additional reference. It is doubtful if it can serve a useful function as the only text for either graduate or undergraduate students. The photomicrographs and drawings would be a useful start on a much needed atlas of oral histology.

F. J. Marshall

REPORT OF THE MEDICAL RESEARCH COUNCIL FOR THE YEAR 1960-1961

London, Her Majesty's Stationery Office, 1962. 372 p. £1. 1s. 0d.

The Medical Research Council in Great Britain has been set up to administer funds provided by the government to support

medical research in that country. The Council applies for funds and reports on their distribution to the Special Committee for Medical Research of the Privy Council, under a somewhat similar arrangement as the Medical Research Council and the National Research Council report in Canada.

The British Medical Research Council allocated a total of £5,646,500 (about \$17,000,000) during 1960-61, mostly on grants-in-aid to support research projects, but substantial amounts on buildings and special equipment as well.

The report contains an excellent summary of the evolution of Council policy since its inception nearly fifty years ago, and also includes a series of ten review articles on special aspects of medical research. One of these deals with the subject of dental caries.

The Medical Research Council supports seven "Medical Research Groups"—teams of research workers, all members of the Council staff, working as groups on common problems—and seventy-four "Research Units." The latter are also research teams but are usually members of a university staff working in their own school, supported by a bloc grant to the university from the Medical Research Council. A new research unit was established during 1960-61 at the school of dentistry in Bristol. This unit consists of four men, working under the direction of Professor A. I. Darling, to investigate the histological, chemical and physical properties of normal tooth enamel, and changes that occur in enamel as caries develops.

K. J. Paynter

A COMPREHENSIVE REVIEW OF DENTISTRY

V. R. Trapozzano. Philadelphia, W. B. Saunders Co. 1961. (Available from Mc-Ainsh & Co. Ltd., Toronto and Vancouver.) 552 p. \$10.50

This book was examined by H. R. MacLean, chairman of the Committee of Examiners of the National Dental Examining Board of Canada, who reported as follows:

"The information is presented in a very concise and useful form as an aid to candidates planning to write examinations, particularly those of American State Boards. In my opinion it should be available in the various (Canadian dental) libraries, but I would not suggest its purchase by dental students."

In addition it would appear to be a useful source book for examiners for provincial boards, particularly in those provinces

where there are no dental schools and where examiners are not members of dental faculties.

For the general practitioner it provides a ready review of all branches of dentistry and quickly relates his clinical knowledge to the basic sciences. It should help him to classify his knowledge more quickly and adequately and he should find himself better able to evaluate techniques and their effectiveness from a scientific basis.

This reviewer considers it a very valuable book for the purposes outlined above.

H. N. Beach

BILDGESCHICHTE DER ZAHNHEIL- KUNDE (PICTORIAL HISTORY OF DENTISTRY

Curt Proskauer and F. H. Witt. Cologne, Verlag M. Dumont Schauberg, 1962. 220 p. Illus. DM 59.00

Dr. Proskauer, one of the authors of this book, is a dental historian of note, and curator of the Charles H. Land Museum at Columbia University School of Dental and Oral Surgery. He has written many books and articles on various phases of the history of dentistry.

This is a beautifully illustrated volume depicting the history of dentistry from Babylonian times to the present, with explanatory notes in German, English, Spanish, French and Italian. One of his former publications, *Iconographia Odontologica* depicted only paintings and prints of early dentistry, whereas this illustrates dentistry in art as well as instruments and techniques through the ages. There are also many extracts and title pages from early medical and dental books, old advertisements, and portraits of such well-known men as Chapin Harris, Alfred Gysi, Edward Angle, Horace Wells and many others.

There is comparatively little historical information given with the illustrations in this book, but as the authors state: "Words will only serve to supplement the pictures, and briefly sketch what is worth knowing about the beginnings of scientific dentistry . . . it was our aim to let the pictures speak."

This is well worth the purchase price of \$17 not only as an art book, but as a dental history in pictures to supplement the many textbooks on the subject now in existence and in the future.

Phyllis Smith

ADDITIONS TO THE LIBRARY

- AMERICAN MEDICAL ASSOCIATION. COUNCIL ON DRUGS. New and non-official drugs. Montreal, Lippincott, 1962. 900 p. illus. \$4.25.
- BEVELANDER, G. Essentials of histology. 4th ed. London, Henry Kimpton, 288 p. illus. \$6.25
- BHASKAR, S. N. Synopsis of oral histology. St. Louis, Mosby, 1962. 295 p. illus. \$8.40
- FENN, LIDDELOW AND GIMSON. Clinical dental prosthetics. 2nd ed. London, Staples Press, 1961. 838 p. illus. \$12.00
- FREESE, A. S. and SCHEMAN, P. Management of temporomandibular joint problems. St. Louis, Mosby, 1962. 235 p. illus. \$9.20
- GROLLMAN, A. Pharmacology and therapeutics. 5th ed. Philadelphia, Lea & Febiger, 1962. 1131 p. illus. \$13.75
- GT. BRIT. COMMITTEE OF PRIVY COUNCIL FOR MEDICAL RESEARCH. Report of the Medical Research Council for the year 1960-1961. London, Her Majesty's Stationery Office, July 1962. 372 p.
- MCGREGOR, I. A. Fundamental techniques of plastic surgery and their surgical applications. Edinburgh, Livingstone, 1962, 286 p. illus. \$5.85.
- MODELL, W. ed. Drugs of choice, 1962-1963. St. Louis, Mosby, 941 p. \$15.70
- MOSER, C. D., GALES, K. and MORPUGO, P. W. R. Dental health and dental services. Report on dentistry in the United Kingdom. Toronto, Oxford University Press, 1962. 64 p. \$0.90
- ORINGER, M. J. Electrosurgery in dentistry. Philadelphia, Saunders, 1962. 428 p. illus. \$19.45
- ROBERTS, F. Good English for medical writers. London, Heinemann, 1960. 179 p. \$3.65
- SAMSON, E. The world's worst teeth. London, Staples Press, 1962. 152 p.
- SHARRY, J. J. ed. Complete denture prosthodontics. Toronto, McGraw-Hill, 1962. illus. 343 p. \$15.15
- STONES, H. H. Oral and dental diseases. 4th ed. Toronto, Macmillan, 1962. 1056 p. illus. \$23.40
- U. S. DIVISION OF DENTAL PUBLIC HEALTH AND RESOURCES. Dental care for the chronically ill and aged; a community experiment. (Public Health Service publication No. 899.) Washington, Govt. Print. Office, 1961. 54 p. illus. \$0.45
- U. S. PUBLIC HEALTH SERVICE. Psychology in dentistry; selected references and abstracts. (Public Health Bibliography Series No. 35.) Washington, Govt. Print. Office, 1962. Mimeo. 232 p.

IN MEMORIAM

HUGH RICHARD McLAREN—Dr. H. R. McLaren of Ottawa, Ontario died on September 2, 1962. He was 50. Born in 1912 in Galt, Ontario, Dr. McLaren received his early education in Malvern Collegiate Institute in Toronto. He studied dentistry at the University of Toronto and graduated in 1936. From 1936 until 1938 he practised in Campbellford, Ontario. In 1938 he joined the Ontario Department of Health and

acted as senior dental officer, Hospital Division. At that time he was dental surgeon for the Ontario Hospital in Hamilton.

At the beginning of the second world war, in September 1939, Dr. McLaren was commissioned in the Canadian Dental Corps in the rank of lieutenant. He was promoted to captain in December 1939 and during that month proceeded overseas with the 1st Divisional Dental Company. While over-

seas he served in the United Kingdom, Italy and Sicily and was promoted to the rank of major in March 1943. He was returned to Canada for medical reasons in September 1944 and was released on medical grounds from the Canadian Army in July 1945.

Dr. McLaren obtained his Diploma in Dental Public Health at the School of Hygiene and Faculty of Dentistry, University of Toronto in 1946. From 1946-1948 he served as dental health officer in the City of Windsor Health Department, and in 1948 joined the Department of National Health and Welfare, where he held appointments as assistant chief, Dental Health Division, and latterly dual appointments as principal dental officer, Indian and Northern Health Services and as consultant, Emergency Health Services, Dental Health Division. In 1957 he was awarded a specialist's certificate in Dental Public Health by the Royal College of Dental Surgeons of Ontario.

In 1950 Dr. McLaren was chairman of the Dental Health Section of the Canadian Public Health Association. He was also a Fellow of the American Public Health Association, having served as vice-chairman of the Dental Health Section of the American group in 1953 and as a member of the governing council of the American Public Health Association from 1958-1961. Dr. McLaren was also a member of the Royal Society for the Promotion of Health (Great Britain).

Following services overseas in the second world war, Dr. McLaren joined the Royal Canadian Dental Corps Militia in 1947. In 1950 he was promoted to the rank of lieutenant-colonel and appointed to command No. 7 Dental Company, Ottawa where he remained as commanding officer of that unit until appointed to the Dental Advisory Staff as Deputy Assistant Director of Dental Services, Eastern Ontario Area in 1954. Dr. McLaren was promoted to colonel in 1956 and appointed Assistant Director of Dental Services, Central Command Dental Advisory Staff. In 1961 he was appointed Queen's Honorary Dental Surgeon.

Dr. McLaren is survived by his wife, Gwynneth; parents, Mr. and Mrs. T. H. McLaren of Toronto; brother, Wilson of California; and sister, Mrs. R. M. Buckingham (Marion) of Baie D'Urfe, Quebec.

ALBERT JOACHIM—Dr. Albert Joachim is dead. A dentist of international repute, Dr. Joachim died at Lives-sur-Meuse, Belgium on August 27, 1962. Long active as a practising dentist, teacher, and officer of dental organizations in Belgium and abroad, he

was a past president and an honorary vice president of the Fédération Dentaire Internationale.

Dr. Joachim was born in Brussels in 1882. He was a former staff member of l'Ecole Dentaire Belge and a former editor of the *Journal Dentaire Belge*. Dr. Joachim received many honours during his career. He was a Fellow in Dental Surgery of the Royal College of Surgeons of England, a Fellow of the American College of Dentists, an honorary member of the Société Dentaire de Montréal, as well as an honorary member of various European national and scientific organizations. Other honours were conferred on him by the Belgian, French and Italian governments.

Dr. Joachim's name is enshrined in the "Albert Joachim Prize" of the Fédération Dentaire Internationale, an international prize for original scientific research of a laboratory of clinical nature.

MARION JOY—Dr. Marion Joy of Toronto, Ontario died on August 13, 1962. She was 66. Born in North Dakota in 1896, Dr. Joy studied at the dental school of the Royal College of Dental Surgeons of Ontario and graduated in 1922. She practised in Toronto for 5 years, then joined the staff of the Toronto General Hospital. Dr. Joy organized the dental clinic at the Women's College Hospital in 1922. She also organized the Toronto Society of Women Dentists.

SANDRA ANNE MATHER—Miss Sandra Anne Mather, R.D.H., of Calgary, Alberta died on September 4, 1962. She was 21. Born in Calgary in 1941, Miss Mather attended the course in dental hygiene at the Faculty of Dentistry, University of Toronto and graduated in 1961. She resided in Calgary.

HECTOR ALEXANDER MUTTON — Dr. H. A. Mutton of Mitchell, Ontario died on August 19, 1962. He was 73. Born in Lucknow, Ontario in 1889, Dr. Mutton received his early education at Wingham High School. He studied at the Royal College of Dental Surgeons of Ontario and graduated in 1923. From 1923 until 1926 he practised in Gorrie, Ontario, then moved to Mitchell. He is survived by his wife, Elsie; sons, Richard Arthur of Kitchener and Ross Herbert of Calgary; and a daughter, Mrs. K. M. Hulley (Mary) of Deep River, Ontario.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
19-25 novem- bre, 1962	XXXVies Journées dentaires interna- tionales de Paris	Maison de la Chimie, Paris, France	M. Georges Delbart	7 rue Pierre-Haret, Paris 9e, France
Nov. 22, 1962	Academy of Den- tistry, Toronto Winter Clinic	Royal York Hotel, Toronto	Mrs. N. H. Montgomery	230 St George Street, Toronto, Ontario
Feb. 16-23, 1963	Second Caribbean Dental Convention	Trinidad Hilton Hotel, Port-of- Spain, Trinidad	Dr. A. V. Awon	43-35 Frederick Street, Port-of- Spain, Trinidad
March 28-29, 1963	Alberta Dental Association	Hotel Palliser, Calgary	Dr. D. L. Thompson	206 Medical Arts Building, Calgary, Alberta

POSTGRADUATE AND REFRESHER COURSES (CANADA)

TORONTO—The Faculty of Dentistry, University of Toronto offers a postgraduate course in NORMAL and PATHOLOGICAL ANATOMY, February 6-8, 1963. An anatomist, a histologist, and a pathologist will review and discuss the structure and function of the head and neck, and the problems of disease as they are manifested in dental practice. The course will be presented by Drs. J. E. Anderson, H. A. Hunter, and K. J. Paynter. Tuition fee \$60.

The Department of Endodontics, Faculty of Dentistry, University of Toronto offers a postgraduate course in ENDODONTICS, February 27-March 1, 1963. The course will include illustrated lectures showing techniques of endodontic procedure. Instrument manipulation clinics will be followed by demonstration operations on patients. The course will be directed by Dr. G. C. Hare. Tuition fee \$60.

Enquiries and requests for application forms should be directed to the Chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 2, Ontario.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

NEBRASKA—January 21-22, 1963—Paedodontic Appliances

NEBRASKA—January 28-29, 1963—Endodontics

NEW YORK—January 14-18, 1963—Complete Dentures

OHIO STATE—January 14-16, 1963—Hospital Management for Dental Procedures

OHIO STATE—January 21-25, 1963—Oral Medicine

OHIO STATE—January 30-February 1, 1963—Crown and Bridge Work

TEMPLE—January 7-11, 1963—Implant Dentures

TEMPLE—January 23-24, 1963—Endodontics for the General Practitioner

YESHIVA—January 24-25, 1963—Anaesthesiology

Due to lack of space the Journal cannot accommodate all announcements of foreign dental meetings and postgraduate and refresher courses. Readers are invited to write to C.D.A. headquarters for information concerning unlisted meetings and courses. Further information concerning listed meetings and courses should be sought from the sponsoring institution.

L'Association Dentaire Canadienne.

JOURNAL

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L'implantation et sa raison d'être

par I. L. FEINCHNEIDER, D.D.S., Montréal, P. Qué.

L'implantation dentaire existe sous une forme ou sous une autre depuis l'antiquité la plus reculée; les égyptologues prouvent à l'aide de documents l'existence d'inclusions métalliques dans les maxillaires. A une époque plus récente, Ambroise Paré (1593), Lecluse (1755), John Hunter (1775) et Fauchard (1786) ont décrit des implants isolés constitués de différents matériaux.

Le principe de l'implantation n'est pas neuf; cependant notre ère moderne, grâce aux perfectionnements de la technique, à la découverte de nouveaux matériaux, aux progrès de la chirurgie et de la pharmaco-

logie, peut s'aventurer plus à fond dans ce système, entreprendre une variété plus grande de cas et obtenir des succès plus nombreux et plus stables.

L'implantation dentaire a fait couler beaucoup d'encre depuis la publication de Dahl, de Stockholm, en 1943. Les succès obtenus avec les implantations subpériostales ont inspiré Gershkoff et Goldberg à modifier la technique de Dahl pour arriver au système d'implantation moderne pratiquée depuis 1959. Formiggini, en 1947, inspirait Zepponi, Albanese, Perron, Andrès, Lehman et Cherchève à trouver les principes de l'implant endo-osseux actuel.

Conférence présentée à la Société d'Endodontie de Montréal, en février 1962.

INDICATIONS GÉNÉRALES

L'implantation s'adresse à des patients qui ont des problèmes auxquels les techniques raffinées de la prothèse dentaire n'apportent pas de solution; ces édentés à qui des pièces conventionnelles imposent des supplices intolérables; ces mutilés dentaires complètement ou partiellement qui sont voués à une infirmité permanente et qui végètent dans des conditions pitoyables faites de douleur physique et de frustration psychique.

L'implantation peut souvent réhabiliter ces sujets, mais les conceptions biologiques actuelles de la profession dentaire et des hésitations à se départir des procédés conventionnels pour opter pour des méthodes plus audacieuses, certes, mais combien plus rationnelles, se refusent souvent à utiliser ces techniques.

L'implantation a fait ses preuves; depuis treize ans, elle est acceptée par l'avant-garde de la profession dentaire comme moyen reconnu de solutionner des difficultés de prothèse; ses succès en clinique sont acceptés; les dentistes avisés n'hésitent pas à recourir à elle lorsque le cas l'exige et quand il répond à diverses conditions.

Car, ne peut avoir des implants qui veut; les patients doivent être choisis selon des critères rigides; ils doivent être préparés physiquement et psychiquement; ils doivent présenter des garanties sûres de santé.

L'implantation ne supplantera jamais la prothèse classique; elle n'est qu'un autre moyen ajouté à ceux qui existent déjà pour traiter des patients édentés en difficulté.

Ce procédé trouvera un jour sa place parmi les techniques courantes et recevra sa consécration officielle.

INDICATIONS PARTICULIÈRES

1. Des patients, ayant des dents en occlusion normale, ont perdu dans des circonstances malheureuses un quadrant de molaires. Il faut évidemment remplacer

les dents absentes; la région antagoniste souffrira d'alvéolyse et les dents sans occlusion s'allongeront en entraînant le procès alvéolaire. Le patient qui néglige cette substitution s'expose à la perte d'un deuxième quadrant unilatéral. La prothèse conventionnelle qui s'impose est un appareil unilatéral amovible qui s'appuie sur des dents normales du côté opposé. Un implant rétablit, dans la plupart des cas, une relation fonctionnelle sans conséquence physiologique ou psychologique; les dents manquantes sont remplacées par un pont fixe sur piliers postérieurs implantés.

2. D'autres patients sont édentés au maxillaire inférieur et possèdent de bonnes dents naturelles au maxillaire supérieur. On sait que la pression exercée par des dents naturelles sur une prothèse complète inférieure résorbe en peu de temps la crête inférieure la mieux conformationnée.

Faut-il extraire toutes les dents supérieures pour éviter la résorption totale de la crête osseuse inférieure par l'hyperfonction?

Une implantation munie de quelques dents à cuspes réduits peut contrecarrer le traumatisme des dents supérieures. La force masticatrice de l'implant est de 75 livres par pouce carré; celle du dentier complet est de 15 à 25 livres par pouce carré.

3. Nombreux sont les patients qui, pour des raisons diverses, n'ont plus de crête alvéolaire sur la base de la mandibule; les trous mentonniers, à cause de cette résorption excessive, apparaissent à la face supérieure du maxillaire inférieur, les attachements musculaires s'insèrent au dessus du replis muqueux; les apophyses génies surplombent la crête. Ces patients, malgré les interventions chirurgicales, ne peuvent pas s'accommoder à un dentier conventionnel, malgré les techniques avancées de la prise des empreintes et du montage des dents. Faut-il condamner ces malades à une infirmité physique et mo-

rale permanente ou vaut-il mieux leur proposer un implant? Cet implant contourne les trous mentonniers et assure une stabilité à la prothèse.

CONSIDÉRATIONS PRÉ-OPÉRATOIRES

L'état constitutionnel et les dispositions psychologiques du patient doivent être l'objet des premières considérations de l'opérateur avant de préconiser l'implant.

Le dentiste, par ailleurs, doit posséder une connaissance approfondie des diverses techniques de l'implantation. Un examen minutieux des maxillaires s'impose; de même un bon diagnostic et un plan de traitement rationnel.

Trop d'échecs malheureusement sont les résultats d'une incompétence et de lacunes de l'examen, du diagnostic et du plan de traitement!

L'interprétation de la physiologie endocrinienne de l'os peut déjà établir les chances de succès; la radiographie illustre un os ferme, qui résistera à la résorption qui suit la réaction inflammatoire à l'implant, par la présence de fines trabécules serrées les unes près des autres qui forme un reticulum hautement calcifié; par ailleurs, un os poreux à grosses trabécules comporte des risques considérables.

La tomographie, qui détermine la localisation des couches anatomiques où sera placé l'implant, fournit aussi des renseignements précieux sur la résistance éventuelle de l'os à l'implant.

GLANDE PITUITAIRE

La glande pituitaire joue un rôle prépondérant sur tout le système endocrinien. Située sur la selle turcique, elle exerce une influence trophique sur la glande thyroïde, les surrénales et les gonades. Son lobe antérieur de structure épithéliale contient trois types de cellules: les acidophiles ou éosinophiles, qui règlent la croissance du corps par l'hormone de la croissance; les cellules basophiles agissent sur le développement sexuel qui est en

fonction de la croissance, tandis que les cellules chromophiles complètent le troisième type de cellules.

L'illustration schématique de quelques glandes indique leurs effets directs sur le squelette et indirectement sur la résistance de l'os des maxillaires en face des implants.

Il est possible de rectifier une déficience du métabolisme des protéines par des suppléments de viandes, Vit. D et C. L'hyper ou l'hypofonction pathologique, avant de songer à utiliser l'implantation, doivent être traités par un endocrinologiste.

Un éminent pionnier de l'implantation, le docteur Cherchève, nous rapporte aussi les résultats de ses recherches:

"La loi générale qui concerne la réparation des tissus (cutanés, tendineux, osseux et nerveux) qui, à l'état normal, sont des tissus conjonctifs spécialisés établit que dans les conditions anormales (plaies ou traumatisme) ces tissus perdent leur spécialisation.

Ils retournent à l'état banal de conjonctif cicatriciel. La production, le "devenir" de ces tissus sont sous la dépendance des régulateurs neuro-hormonaux.

Le conjonctif est le même chez tous les hommes et chez tous les animaux, mais ses réactions varient avec les commandes neuro-hormonales venues de l'axe hypophyso-surrénalien. Pour la production du "devenir" du conjonctif cicatriciel, il est indispensable d'avoir un équilibre neuro-hormonal afin de guider dans notre cas, l'ostéogénèse qui est avant tout la conséquence d'un processus de réparation conjonctive. Le jeu de commandes neuro-hormonales va guider celle-ci vers une minéralisation d'une matrice protéique.

MÉCANISME DIRIGÉ PAR L'ÉLABORATION D'HORMONES

Vont favoriser la consolidation des masses d'apport de cellules conjonctives indifférenciées vers leur spécialisation.

Les hormones anaboliques.—Le somatotrope, la thyroxine.

Les hormones cataboliques.—Empêcheront la consolidation, la cortisone.

Ainsi, un déséquilibre neuro-hormonal ne conduit pas la matrice jusqu'au stade adéquat ou encore fera dépasser ce stade.

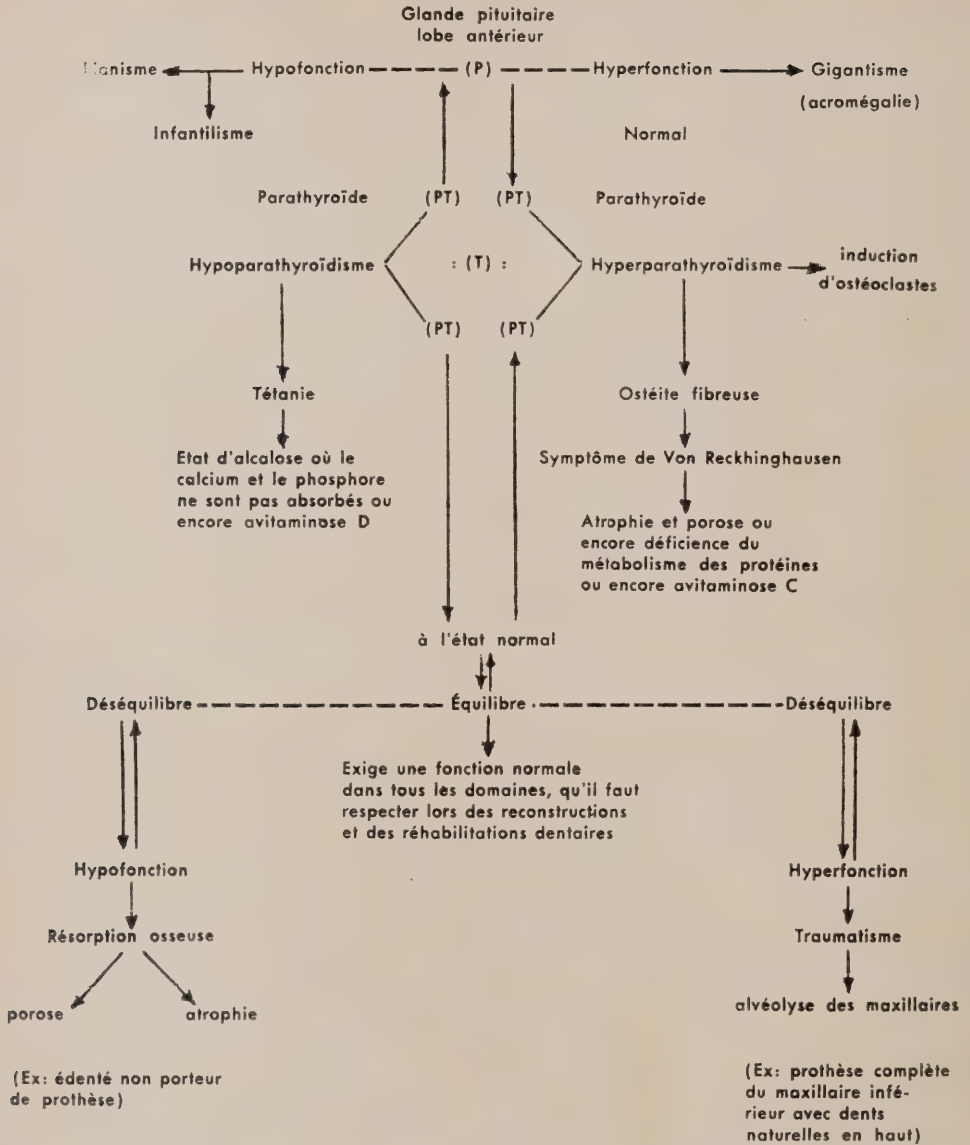


Illustration schématique de quelques glandes du système endocrinien. P, pituitaire; PT, parathyroïde; T, thyroïde.

Réaction tissulaire en face d'une implantation.—Endo-osseuse: (1) formation d'un caillot sanguin; (2) envahissement de cellules d'ordre conjonctif; (3) différenciation de cel-

lules en (a) cellules ostéogéniques du périoste, (b) péricytes, (c) cellules d'endothélium vasculaire.

Toutes ces cellules perdent alors leur aspect initial pour prendre l'aspect de fibroblastes qui, à leur tour, se multiplient conjointement à une hypervascularisation qui va amener les éléments cellulaires et les matériaux nécessaires à la formation de la matière protéique.

Après la formation des fibroblastes, apparaissent les fibrilles conjonctives associées avec la surface cellulaire extérieure. Tandis que la cellule-souche va évoluer vers l'ostéoblaste actif, caractérisé par l'apparition de phosphate et de glycogène.

Or, la phosphatase est l'enzyme de toute prolifération conjonctive, puisqu'elle est indispensable à la synthèse des mucopolysaccharides (formation de la substance fondamentale). L'activité phosphatasique augmente, s'étend aux fibres collagènes extracellulaires; le glycogène disparaît, le matériel P.A.S. positif apparaît. C'est la matière protéique destinée à se calcifier qui a été réalisée par la disparition de la phosphatase et le glycogène; la cellule se trouve englobée dans sa propre production de fibrilles et de substance fondamentale. Cette matrice dont la formation a été élaborée par l'apport des acides aminés venus des liquides interstitiels.

A cette période de construction protéique, l'action des hormones est particulièrement démontrable.

La cortisone et l'ACTH empêchent la prolifération cellulaire, font chuter le taux des phosphatases, alors que l'hormone somatotrope, les androgènes, la tyroïdine l'augmentent.

Au début de l'ossification, la fraction phosphocalcique existe sous forme de combinaison protéique.

Le phosphate tricalcique, que l'on considère comme l'agent essentiel de la solidité osseuse, ne se déposera que lorsque la matière protéique fixera les ions Ca et Po^4 dans un rapport précis: $\text{Ca/P} = 1.94$. Ce rapport étant celui du phosphate tricalcique lui-même.

D'autre part: la calcaïffinité de la matrice protéique n'apparaît que pour un ph déterminé et les variations de cette affinité s'expliquent par les variations du ph .

Le ph acide des premiers jours est favorable à la dialyse des ions minéraux. Cette acidité (ph 5.8) est due à la mise en liberté de l'acide lactique; l'hémotine contient 13 fois plus d'acide lactique que le sang normal.

Puis le ph devient alcalin (ph 7.8); il se maintient ainsi jusqu'à la fin de la consolidation.

Notre consolidation se module donc sur les variations de l'équilibre acide-base dans la cicatrisation conjonctive.

Au début, l'hypervascularisation s'accompagne de stase qui conditionne un ph acide par manque d'oxygène. En effet, le métabolisme du glycogène est à prédominance anaérobie, comme le montre la présence du lactate.

La phase d'acide métabolique dure une période variable — puis le milieu redevient progressivement normal — puis passe du côté de l'alcalinité et alors la calcification devient possible.

Ces variations "acide-base" déterminantes sont oscillantes: elles dépendent de la *vascularisation*, qui dépend de l'équilibre *neuro-hormonal*, qui dépend de l'axe hypophyso-surrénalien.

La réaction fort agressivement harmonieuse permet la séparation normale avec le déroulement des deux phases: Acide métabolique d'abord, STH; alcaline minérale de calcification en suite: ACTH — cortisone.

Ces deux phases sont oscillantes, elles se déroulent harmonieusement jusqu'à la séparation finale. Mais si l'hypervascularisation du début persiste, si le mécanisme séparateur ne laisse pas au préalable de place au second qui doit lui succéder, ou s'il se prolonge au delà de son temps normal, bref, si en son temps, les phénomènes cataboliques ne succèdent pas harmonieusement aux phénomènes anaboliques, nous assisterons à un retard de consolidation.

Judet et Roy ont mis en évidence, dans cette période de dépassement de la normale, dans le col et les parties molles environnantes, une hypervascularisation et un accroissement de cellules que l'examen histologique révèle, contrairement à l'opinion classique qui pensait qu'il se produisait alors un appauvrissement vasculaire.

L'emploi de la cortisone allait pouvoir rétablir le cours naturel des phénomènes séparateurs et déclencher la seconde phase, bloquée par dérèglement hormonal.

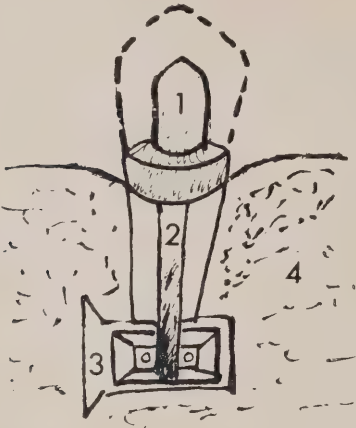
Cette action, en apparence contradictoire, de la cortisone en tant qu'agent séparateur ne pouvait être efficace qu'à condition d'être déclenchée exactement au moment opportun, à l'instant du dérèglement hormonal.

La détermination de cet instant de dérèglement hormonal se contrôle parfaitement par l'électrophorèse sous l'influence de la cortisothérapie. Largot et Antoine virent l'électrophorèse, très perturbée avant le traitement, se normaliser progressivement.

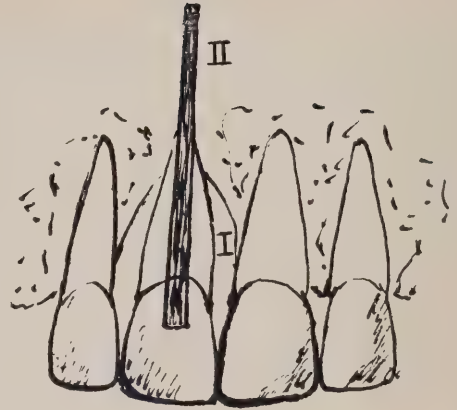
Le docteur Benoit, avec la collaboration du professeur Connard, étudièrent dans les séparations osseuses l'état des fractions protéiques du serum de leurs patients, également par l'électrophorèse et constatèrent: — que l'électrophorèse était perturbée dans les retards de consolidation; — que l'électrophorèse était normalisée sous l'influence de la cortisone.

CONSÉQUENCES THÉRAPEUTIQUES

Avec une prise de sang, le laboratoire de chimie biologique, grâce à l'électrophorèse et selon la variation de la courbe de l'électro-



DESSIN 1 Implant intra-osseux. 1, Couronne Richmond avec moignon coulé; 2, Pivot coulé inséré dans le corps de l'implant intra-osseux; 3, Corps coulé implanté dans la région apicale; 4, Os maxillaire.



DESSIN 2 Implant tuteur de Orley. I, Alvéole résorbée; II, Implant tuteur radulaire: insertion dans maxillaire.

phorèse, permet d'agir à l'avantage du cal implantaire.

Le praticien peut freiner le catabolisme azoté ou l'accélérer.

1. S'il y a insuffisance de phénomènes initiaux séparateurs, il pourra utiliser toute la gamme des androgènes (Androtardyl, Androtardyl-oestradiol), ou mieux encore le jumelage d'un anabolisant hormonal et d'un anabolisant vitaminique réalisant une synergie androgénovitaminique freinant le catabolisme azoté et stimulant les processus enzymatiques anabolisants.

L'androstanolone, par l'absence de la double liaison en 4-5 de la testostérone, diminue considérablement l'action masculinisante, alors que l'action sur le métabolisme azoté est maintenue.

2. S'il y a hyperanabolisme, le praticien aura recours à la cortisone ou à ses dérivés.

Nous pourrions par ces moyens remédier aux retards dus aux troubles de la calcification provoquée par la persistance de la phase métabolique.

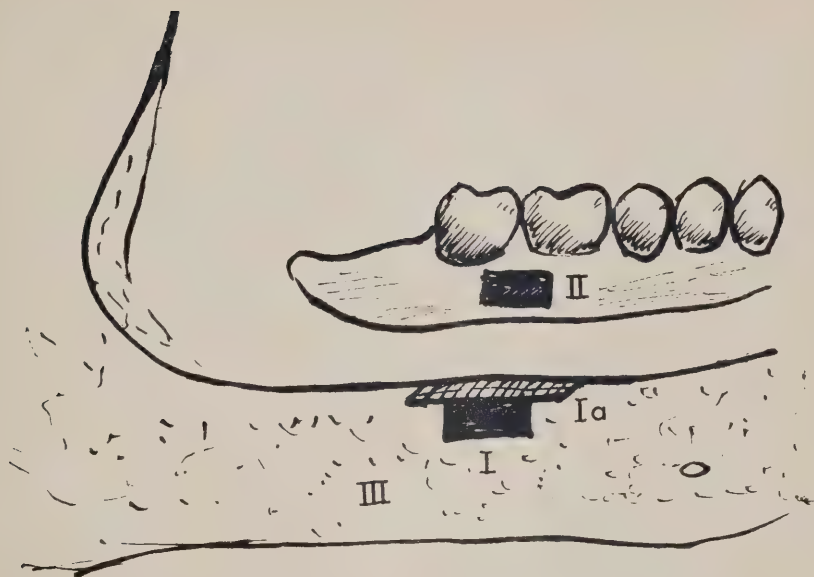
Il reste qu'à l'état normal, l'équilibre sera respecté et la fonction normale rétablie. Or,

il dépend de notre examen clinique, radiologique avec tomographies, d'un plan de traitement adéquat et de sa réalisation relative, qui tient compte de l'occlusion fonctionnelle et de la structure osseuse avec les relations anatomiques du sujet, pour déterminer une réhabilitation ou reconstitution avec le type d'implantation qui convient pour ce cas.¹

TYPES D'IMPLANTS

(a) Intraosseux. — Bloc de métal inerte inséré dans la mandibule servant à supporter des pivots dépassant des racines naturelles qui auraient perdu leurs alvéoles (périodontose). Ce procédé permet de stabiliser des dents existantes douteuses ou encore maintenir des piliers naturels pour recevoir des attaches de prothèse amovibles et fixes (Dessin 1).³

(b) Endo-osseux. — Implant à spirale, à fût ou à arceau, qui sert pour le remplacement d'une dent isolée ou de plusieurs dents avec piliers mixtes (cou-



DESSIN 3 Implants magnétiques de Dondey. I, Implant magnétique avec treillis (Ia); II, Implant magnétique du dentier; III, Os mandibulaire.

ronne sur dents naturelles et implant endo-osseux pour pont fixe) ou encore l'insertion d'une série d'implants endo-osseux avec superstructure de relais pour le complet; cet implant est inséré dans une alvéole radiculaire, naturelle ou artificielle (Figures 1 et 2).¹

(c) Implants tuteurs de Orley. — Pivots de métal inertes dépassant les apex pour s'insérer directement dans l'os du maxillaire (périodontose); ces pivots traversent les canaux radiculaires des dents existantes dépourvues d'alvéoles pour les stabiliser par l'os du maxillaire afin d'économiser le jumelage par couronnes ou le "pinledge" (Dessin 2).⁵

(d) Implants magnétiques de Dondey. — Petits blocs de métal aimantés insérés aux deux extrémités de la mandibule (géné-

ralement région $\overline{7|7}$) dans l'os et totalement recouverts par la muqueuse (Dessin 3).⁷

(e) Implants boutons-pression sous-muqueux de Frederickson. — Boutons mâles et femelles en chrome-cobalt dont une partie "F" est insérée sous la muqueuse et l'autre partie "M" dans la prothèse; ces boutons-pression s'utilisent pour stabiliser une prothèse qui repose sur une crête de dépouille extrême créée par une malformation congénitale ou une chirurgie extensive. (Dessin 4).¹

(f) Implant subpériostéal. — Base squelettique coulée en Vitallium d'après l'empreinte de la mandibule ou du maxillaire supérieur avec piliers dépassant la muqueuse pour une superstructure fixe ou mobile (Figure 3).⁴

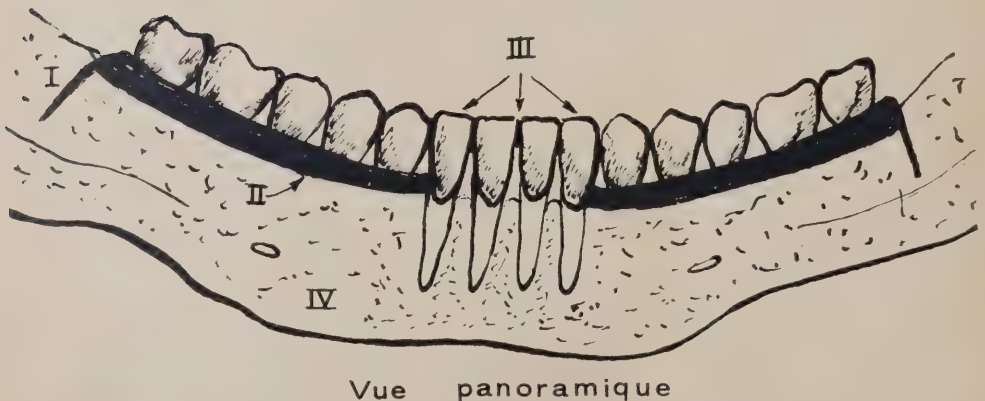


DESSIN 4 Implants boutons-pression sous-muqueux de Frederickson. F, Section de la muqueuse; M, Section du dentier.

(g) Superplant. — Superstructure supportée par des piliers naturels antérieurs et pivots endo-osseux postérieurs pour maintenir une prothèse fixe (Dessin 5).⁶

CAUSES D'ÉCHECS

1. Santé débile du patient.
2. Erreur dans le diagnostic ou dans le plan de traitement.
3. Erreur dans le choix ou le dessin de l'implant.
4. Mauvaise adaptation de l'implant.
5. Extraction trop récente.
6. Manque de parallélisme des piliers.
7. Superstructure inadéquate.
8. Traumatisme de l'occlusion, hauteur et interférence des cuspides en centrique et en fonction.
9. Mauvaise technique chirurgicale.



Vue panoramique

DESSIN 5 Superplant. Éléments du superplant: I, Pivot endo-osseux; II, Superplant de la muqueuse; III, Jumelage des 4 dents antérieures; IV, Schéma de l'os mandibulaire.

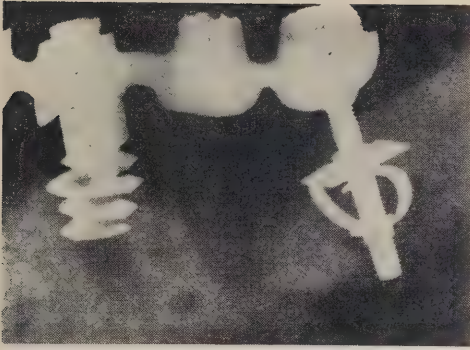


FIGURE 1 Implant endo-osseux.



FIGURE 2 Implant endo-osseux; même cas que Figure 1, trois ans après mise en place.

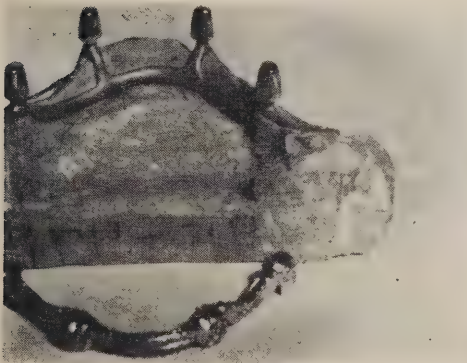


FIGURE 3 Superplant sur modèle avec sa superstructure.



FIGURE 4 Implant subpériostéal au moment de la mise en place.



FIGURE 5 Même cas que Figure 4; superstructure avec pont terminé sur modèle.



FIGURE 6 Même cas que Figure 5; pont inséré sur piliers d'implant, trois ans après.

CONCLUSION

Les implants subpériostéaux sont utilisés avec succès depuis treize ans. Ces implants endo-osseux sont connus depuis quelques neuf ans et leur vogue grandit de plus en plus. Les dentistes du 18^e siècle ont connu ces deux genres d'implants et les ont abandonnés; le dentiste moderne a comme redécouvert ces procédés et, grâce aux matériaux nouveaux, aux techniques plus précises et surtout à l'étude plus approfondie du terrain où se pratiquent ces interventions, il obtient des réussites spectaculaires.

L'implant endo-osseux est l'implant idéal pour l'omnipraticien et aussi pour le patient dont les suites opératoires sont minimales. Comme le dit si justement le docteur Cherchève: "l'implant seul, sans la méthode coordonnée qui doit l'accompagner, est comparable à une voiture, mais sans chemin, sans route pour la conduire à destination".¹

L'implantation a une place justifiée parmi nos procédés de reconstruction et de réhabilitation prothétiques.

Le praticien, qui a des notions justes sur les réactions des tissus aux différents types d'implants, peut se familiariser avec les diverses techniques de l'implantation moderne.

Les moyens modernes de diagnostic clinique, radiologique (tomographie) pharmaceutique et bactériologique (électrophorèse) augmentent jusqu'à 95% les chances de succès de cette méthode. Le but de l'implantation est de rendre service au patient et de lui restaurer sa fonction masticatrice, phonétique et esthétique:

résultats que ne peuvent pas toujours réaliser nos procédés conventionnels.

SUMMARY

Dental implants are not new; they have been used since the beginning of human history. Improved surgical technique, advances in pharmacology, better evaluation of the resistance of bone (by examination of the endocrine system), improved radiographic technique (tomography), and the availability of new materials enable the contemporary dentist to render, by means of implants, prosthetic services where conventional methods fail.

The author describes various types of implants in use today and stresses the importance of a proper diagnosis in achieving success.

He also lists the principal causes of failure in this special type of prosthetic service.

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5757 Descelles

Conseil des Gouverneurs • Le Conseil des Gouverneurs de l'Association dentaire canadienne se compose de membres choisis par les organismes dentaires des dix provinces du Canada. Le conseil s'assemble, chaque année, durant les quelques jours qui précèdent le congrès. Tous les membres de l'Association dentaire canadienne peuvent participer aux assemblées annuelles du conseil.

Les caractéristiques raciales de la morphologie des dents

par A. DEMIRJIAN, D.D.S., M.Sc.D., Montréal, P.Qué.

En parlant de la dentition et des dents, on peut répéter et confirmer l'opinion que: tout ce qui est héréditaire est fréquemment racial et tout ce qui est racial est à base génétique. Donc je ne tenterai pas de présenter les données sous un angle exclusivement génétique, racial ou anthropologique.

Avant d'entreprendre l'étude détaillée des différents traits raciaux des dents, il serait opportun de formuler une règle générale, en divisant la denture en deux grandes catégories: inférieure ou supérieure.

Les caractéristiques de la catégorie inférieure sont: esognatisme ou occlusion bout à bout, couronnes des incisives verticales et souvent excavées "en pelle", palais en U, éminence mentionnière absente, mandibule massive, branche montante large, formule tuberculaire des molaires $\frac{4-4-4}{5-5-5}$, dimension considérable de la 3e molaire et son éruption précoce, tubercule de Carabelli fréquent sur les M^1 et M^2 , gabarit dryopithèque sur les molaires inférieures.

Quant aux caractéristiques de la catégorie supérieure, on peut les classer comme suit: orthognatisme ou occlusion normale, rareté des incisives "en pelle", palais en hyperbole, menton proéminent avec une mandibule délicate, microdontie, formule tuberculaire des molaires $\frac{4-3-3}{4-4-4}$, absence ou éruption tardive des 3e molaires, rareté du tubercule de Carabelli.

Parmi les différents traits de la denture mentionnée, ci-dessus, nous allons étudier quelques-uns avec plus de détails:

DIMENSION DES COURONNES

Les manuels d'anatomie dentaire contiennent assez de détails en ce qui concerne les dimensions des dent. C'est pourquoi je me contenterai de vous donner seulement la formule pour l'index des couronnes qui s'exprime par: $\frac{\text{Largeur } 100}{\text{Longueur}}$

et la Module: $\frac{\text{Largeur} + \text{Longueur}}{2}$

C'est surtout la dimension des molaires qui a reçu une très grande considération au point de vue anthropologique. Il est généralement connu que la longueur M-D des molaires, surtout de la M_1 , est la plus grande (mégadonte) chez les noirs d'Afrique, de grosseur moyenne (mésodonte) chez les jaunes d'Asie et la plus petite (microdonte) chez les blancs. La largeur des molaires, surtout au maxillaire inférieur décroît dans l'ordre suivant: M_1 , M_2 , M_3 . Les dimensions de la dernière étant extrêmement variable. Cependant, chez les singes, c'est la M_2 qui est la plus grande, (c'est une condition d'ailleurs qui a existé aussi chez nos aïeux).

La différence sexuelle pour les dimensions dentaires n'est pas aussi significative. Cependant, la denture masculine est beaucoup plus volumineuse que celle de la femme. Cette différence est plus prononcée chez les singes, surtout les Gorilles et les Orang-outans.

Des études généalogiques des dimensions dentaires (surtout dans les cas de microdontie) seraient hautement appréciées. Parce que tous les travaux publiés jusqu'à présent sont le résultat des examens au miroir et à l'explorateur et non pas des mensurations anthropométriques.

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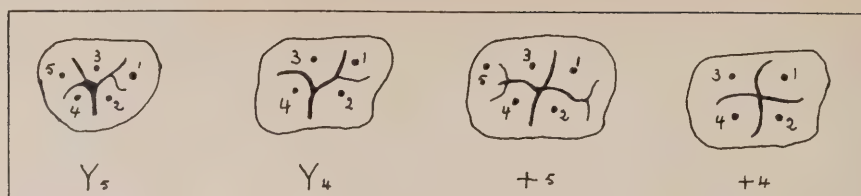


FIGURE 1 Gabarit dryopithèque Y_5 (Classification tuberculaire d'après Hellman).

GABARIT DRYOPITHÈQUE

Hellman¹ a montré que le modèle fondamental des molaires chez l'homme est d'origine anthropoïde. Ce modèle subit des changements continuels qui sont différents suivant l'origine raciale. Pour expliquer ces différences morphologiques tuberculaires, nous allons adopter la classification de Hellman, qui semble être la plus convenable et la plus précise.

Le gabarit dryopithèque fondamental qui est commun à l'homme et au singe anthropomorphe est représenté par la classe I (Figure 1) où l'on voit 5 tubercules; 3 buccaux et 2 linguaux. Un sillon mésiodostal divise la dent en deux, dans le sens longitudinal tandis que trois autres sillons, 2 buccaux et 1 lingual, dérivant du premier, divisent la dent dans le sens transversal.

Les deux sillons buccaux convergent et rencontrent le sillon lingual vers le centre de la dent, formant ainsi la lettre Y. On voit ici la formation de gabarit dryopithèque Y_5 ; Y représentant la forme des sillons et 5 représentant le nombre de tubercules. Dans cette lère classe, la position des tubercules est la suivante: la base de la crête du tubercule 2 est en contact avec la base du tubercule 3, tandis que les tubercules 1 et 4 sont complètement séparés.

Classe II.—Le modèle primitif a été modifié par une réduction des nombres des tu-

bercules de 5 à 4, tout en conservant la forme Y des sillons. Cette classe est représentée par Y_4 .

Classe III.—Le nombre des tubercules primitifs est conservé, mais c'est la forme Y des sillons qui est changée en +. La formule étant $+5$.

Classe IV.—C'est le type le plus moderne où l'on remarque le changement dans la forme des sillons, et aussi le nombre des tubercules. Cette classe est représentée par la formule $+4$, qui se rencontre le plus souvent au niveau des M_2 et M_3 , tandis que le gabarit dryopithèque se rencontre surtout sur les M_1 .

Dans une étude faite par Dahlberg 2, on voit que le modèle Y_5 sur le M_1 , se rencontre surtout chez les Chinois, les aborigènes Australiens, les Indiens de l'Amérique du Nord. On le rencontre moins fréquemment chez les Nègres de l'Afrique de l'Ouest et des Etats-Unis et des Esquimaux. La fréquence est plus rare encore chez les blancs de l'Amérique du Nord et les Européens.

INCISIVES "EN PELLE"

(KEILO-KOILOMORPHISME)

Ainsi appelées à cause de l'élévation accentuée de l'émail marginal, du côté lingual, ces caractéristiques sont très développées au niveau des incisives, surtout

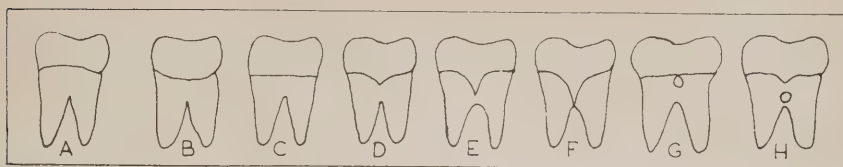


FIGURE 2. Classification des extensions d'émail. Formation des perles d'émail en G et H.

les centrales supérieures et se rencontrent le plus souvent dans les races mongoloïdes 60%. Tandis que chez les blancs, la fréquence n'est pas supérieure à 1% de la population. Il est assez curieux de constater qu'on les rencontre beaucoup plus chez l'homme que chez la femme.

Le Keilo-Koilomorphie n'est pas propre à la race humaine. On le rencontre également chez les singes anthropomorphes; chimpanzé, gorille et orang-outang.

Il est fort probable que l'élévation de l'émail marginal ait un rôle dans le renforcement de la dent. Si l'hypothèse est vraie, ceci explique aussi, peut-être, la disparition des incisives "en pelle" à notre époque et aussi au temps des Egyptiens qui possédaient une culture relativement élevée par rapport à l'homme primitif. Cette disparition des incisives "en pelle" serait le résultat d'une diminution d'usage, conséquence de la civilisation.

4. TUBERCULE DE CARABELLI

L'un des traits les plus discutés est le tubercule de Carabelli sur les M¹. Classiquement, c'est une élévation de l'émail du côté lingual sur le tubercule mésiolingual, à peu près à mi-chemin entre la face triturante et le collet. Sa grandeur est extrêmement variable et il peut être aussi trouvé sur les M² et M³ (Pederson 1949, Shapiro 1949).

Pederson nous donne les pourcentages raciaux suivants:

(1) Hongrois	37.5%
(2) Allemand	19.2%

(3) Hollandais	17.4%
(4) Suisse	11.2%
(5) Russe	10.3%
(6) Pecos Pueblo Indien	8.8%
(7) Finlandais	3.4%

TUBERCULE PARAMOLAIRE DE BOLK

C'est un autre tubercule successeur présent sur le côté buccal des molaires maxillaires ou mandibulaires. Bolk³ l'a défini chez l'homme fossile et l'a retrouvé dans différents groupes raciaux.

EXTENSIONS ET PERLES D'ÉMAIL (fig. 2)

Les extensions d'émail vers la bifurcation des racines ont été classifiées. Il a été rapporté que ceci pouvait être en relation avec les perles d'émail trouvées dans la même population étudiée. Cette caractéristique est commune chez les Esquimaux, mais rare chez les blancs.

TAURODONTISME

Terme proposé par Sir Arthur Keith en 1916 pour définir les conditions suivantes:

(a) un agrandissement de la cavité pulpaire avec amincissement de la paroi dentaire.

(b) une extension de la cavité au delà de la ligne du collet

(c) une fusion des racines.

Le taurodontisme est spécialement remarquable chez l'homme de Néanderthal. Moins prononcé chez le Sinanthrope. Il n'existe pas chez l'homme actuel mais d'après Shaw,⁴ il serait fréquent aussi dans certaines races d'Afrique.

Le terme cynodontisme (caractérisé par une chambre pulpaire petite comme chez le chien) a été employé par opposition au taurodontisme (taureau).

Comme nous le remarquons d'ailleurs, notre étude n'a traité qu'une partie des caractéristiques morphologiques des dents au point de vue racial.

On sait que dans nos études raciales on ne peut pas négliger la denture en général et les os maxillaires (support de la dentition) qui font partie du même appareil maxillo-dentaire. Dans le domaine de l'âge et l'ordre de l'éruption, les dents surnuméraires, l'absence congénitale des dents aussi bien que les torus palatinus et mandibulaires ont été l'objet d'études au point de vue racial. Ils pourraient être le sujet d'un autre article.

De même dans le domaine de la pathologie dentaire, l'hypocalcification de l'émail, le dentinogenesis imperfecta, la fissure palatine sont autant de sujets qui ont été traités sur une base génétique.

Mais il reste encore des horizons à explorer, des champs à cultiver, dans le cadre de l'anthropologie. Ce sont: le diastème, l'antéverson, l'inclination des dents, les asymétries dentaires, les dimensions de la mandibule et de la branche montante, la hauteur et la largeur du palais, l'angle mandibulaire, les types de malocclusion, etc. . . etc. . . qui n'ont pas été étudiés dans les différentes races.

Je pense que c'est aux nouveaux diplômés, qui seront les praticiens chercheurs ou les hommes de science de demain, d'ajouter un brin de lumière aux coins obscurs de la science, plutôt que d'ajouter une autre dent extraite aux montagnes déjà empilées depuis des années.

SUMMARY

The author discusses the relationship of racial characteristics to dental morphology. He presents certain anthropological principles and applies these to dental anatomy. Measurements and observations of human teeth have revealed that certain characteristics are race-related. This is a rather new field of endeavour and further investigations are necessary in order to formulate principles with regard to anthropology and genetics as applied to the human dentition.

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Délibérations de l'A.D.C. • Les *Délibérations* de l'Association dentaire canadienne renferment des comptes rendus du travail de ses conseils, de ses comités et de ses bureaux. On conseille à tous les dentistes du Canada de lire ces *Délibérations* qui sont publiées après la réunion annuelle du Conseil des Gouverneurs.

LES ACTUALITES DENTAIRES

Les Facultés dentaires canadiennes

Chronique internationale

UNIVERSITE DE MONTREAL

Photographie prise au cours d'une fête offerte par le personnel enseignant de la faculté de chirurgie dentaire de l'Université de Montréal au docteur Paul Geoffrion, à l'occasion de la parution de son volume "Clinical application of the twin-wire mechanism." On a offert au docteur Geoffrion une reproduction luxueusement reliée de son volume. La photographie est prise en face du kiosque d'orthodontie qui faisait partie d'une exposition organisée par les étudiants sur les divers domaines de la chirurgie dentaire, au Centre Social de l'Université de Montréal. De g. à d.: les docteurs Jean-Paul Lussier, doyen, Paul Geoffrion et Gérard de Montigny, secrétaire.



UNE COUR DE CHICAGO SOUTIENT LA CAUSE DE LA FLUORATION

La fluoration à Chicago (qui est la ville la plus considérable à avoir un système municipal de fluoration) vient de remporter une victoire retentissante, le 22 juin.

Le juge-en-chef, Samuel Epstein, de la Cour Supérieure de Cook County, s'est prononcé en faveur des arguments du Conseiller de la Chancellerie, qui avait préparé un rapport détaillé sur la légalité et la constitutionnalité de la fluoration.

Le juge Epstein, dans son jugement, a déclaré: "Je suis d'avis que le rapport du Conseiller de la Chancellerie doit être sanctionné et que les objections et l'opposition à cette mesure doivent être rejetées pour que justice soit faite".

L'injonction, qui avait été signifiée le 1er mai 1956, prétendait que la fluoration était inconstitutionnelle et dangereuse pour la santé. Le procès a demandé cinquante-et une séances et nécessité 2,930 pages de témoignages.

M. Goldberg, dans son rapport, a qualifié les arguments soulevés par la poursuite comme étant "des détails insignifiants qui ne peuvent changer en rien les conclusions évidentes et certaines apportées par les experts de la défense: entre autres, que la fluoration de l'eau de consommation dans la proportion idéale d'une partie pour un million crée une diminution substantielle de la carie dentaire. Ces conclusions sont substantiées par les experts même de la poursuite."

Le rapport continue ainsi: "Ces individus prétendent qu'il n'y a pas de preuve que l'incidence de la carie dentaire diminue avec la fluoration. Mais, en même temps, ils admettent que le fluor contribue à durcir l'émail".

Le factum du Conseiller souligne que "la fluoration ne doit pas être considérée comme

une médication, mais comme une mesure qui équilibre la diète. La fluoration n'est pas une médication dans le sens général du terme, parce qu'elle ne fait qu'ajouter à l'eau les mêmes minéraux que l'eau contient à l'état naturel dans plusieurs régions du pays".

Les remarques de M. Goldberg ont révélé qu'il y a une relation directe et importante entre la santé dentaire et la santé générale de l'individu. La fluoration est une mesure saine qui aura un effet sur la santé générale en amenant une diminution de la carie dentaire.

Le sous-lieutenant J. M. M. Houde, de l'Université de Montréal, et l'élève-officier R. T. Mori, de l'Université de l'Alberta: tous deux gagnants du trophée accordé par l'instructeur en chef pour compétence dans le travail clinique au cours de la troisième phase d'instruction;

L'élève-officier H. Griesbach, de l'Université de Toronto: trophée d'honneur pour la deuxième phase d'instruction;

L'élève-officier I. C. Wambara, de l'Université de Toronto: trophée d'honneur pour la première phase d'instruction.

PROMOTIONS

Le Corps dentaire royal canadien

OFFICIER SUPERIEUR A LA RETRAITE

Le lieut.-col. A. R. Smith, officier dentiste à la Base aérienne de l'A.R.C. à Saint-Jean, depuis 1958, vient de quitter l'Armée régulière pour prendre sa retraite. Le lieut.-col. Smith s'était enrôlé la première fois en 1940. Diplômé de la faculté d'art dentaire de l'Université Dalhousie, il a servi dans le Corps dentaire jusqu'au moment de sa libération en 1945. Enrôlé de nouveau en octobre 1947, il a servi en Corée de même que dans plusieurs établissements de la Marine et de l'Aviation, tant dans les Maritimes que dans le Québec. Il est retourné, avec sa femme et ses quatre enfants, dans sa province, l'Île du Prince-Edouard, où il continuera de servir en qualité de rappelé dans la Milice.

TROPHEES OFFERTS PAR L'ECOLE DU CORPS DENTAIRE

Les étudiants en chirurgie dentaire qui reçoivent une aide financière du Ministère de la Défense nationale sont obligés de subir de l'instruction pratique chaque été, en vue de se préparer à servir comme dentistes militaires. Au cours de chacune de ces périodes d'instruction, on présente des trophées aux candidats qui se classent premiers. Voici le nom de ceux qui ont mérité cet honneur en 1962:

Le sous-lieutenant C. M. Mason, de l'Université de l'Alberta: trophée d'honneur pour la troisième phase d'instruction;

Le Quartier général de l'Armée vient d'annoncer la promotion du major W. R. Thompson au grade de lieutenant-colonel et celle du capitaine H. G. Bunston au grade de major.

Le lieut.-col. Thompson a été élevé à Campbellford (Ontario) et il a servi dans l'Armée canadienne et l'Aviation royale du Canada pendant la seconde guerre mondiale. Après avoir obtenu sa libération des forces armées, il est entré à l'Université de Toronto, où il a obtenu son diplôme de dentiste en 1949. Depuis cette date, il a servi dans le Corps dentaire à plusieurs endroits au Canada de même qu'à l'étranger et il fait actuellement partie du personnel de l'Ecole du Corps dentaire, au Camp Borden. Le lieut.-col. Thompson est marié et il est père de trois enfants.

Le major Bunston, qui est présentement affecté au H.M.C.S. Shearwater à Dartmouth (N.-É.), a servi durant la guerre dans l'Aviation canadienne au Canada et outre-mer. Il a étudié la chirurgie dentaire à l'Université McGill, où il a obtenu son diplôme en 1952. Le major Bunston a rempli divers postes dans des établissements de la Marine, de l'Armée et de l'Aviation au Canada et il a été aussi affecté à la 35e Unité dentaire de campagne en France. Il est marié et père de trois enfants.

LE LT.-COL. THOMPSON AU CONGRES DE L'E.O.D.A.

Le lieut.-col. W. R. Thompson, instructeur de chirurgie buccale à l'Ecole du Corps dentaire de Camp Borden, a présenté, lors du congrès de l'Eastern Ontario Dental Association tenu à Ottawa, un travail intitulé: "Complications possibles en exodontie et en chirurgie buccale mineure — Prévention et traitement."

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The Problem of Emergency Health Planning

The Hon. J. WALDO MONTEITH, P.C., M.P., F.C.A., LL.D.*

The time, place and size of a disaster cannot be readily predicted. It may vary in magnitude from a multiple automobile collision through a range of natural or industrial catastrophes to the totality of nuclear war. Usually only the stark facts of the disaster in terms of dead and injured are reported and little is heard of the preparations and management procedures used by the hospitals and the medical profession to provide rapid and efficient medical care for the survivors.

In this nuclear age, Canada must also prepare for the possibility of nuclear war. Foremost, amongst the many difficult problems involved in making such preparations, are those of providing medical care for large numbers of injured and at the same time instituting measures for the maintenance of health and prevention of disease in the surviving population. The basic studies that have been carried out on the size of these two tasks, indicate clearly that planning must be done now for the efficient mobilization and use of the total health resources of our nation. Top priority in such planning has been assigned to the problem of trained health manpower.

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The medical profession alone cannot cope with chaotic conditions of nuclear war and consequently it looks to the other health disciplines for assistance in this major task. The Canadian Dental Association has participated actively in the emergency health planning field with both the federal and provincial levels of government. Although the provincial government bears the major responsibility for the planning and organization of an Emergency Health Service, such planning would be of little use, in an emergency, until the municipalities are prepared and every health worker in the community is aware of his role in a national emergency. Therefore, I welcome this opportunity provided by the *Journal of the Canadian Dental Association* to bring to the dental profession of Canada an awareness of the problem and information on specific measures being taken to meet the possible situation that would arise if our country were faced with a nuclear attack.

Organisation des mesures d'urgence de santé

Honorable J. WALDO MONTEITH,* P.C., M.P., F.C.A., LL.D.

On ne peut prévoir l'endroit, le temps et l'intensité d'une catastrophe. Une catastrophe peut consister en une collision de plusieurs automobiles, un déchaînement de forces naturelles, un cataclysme industriel et une explosion nucléaire. Le citoyen, quand se produit une catastrophe, n'entend généralement parler que du nombre des morts et des blessés; les nouvelles insistent peu sur les mesures que doivent prendre les hôpitaux et les médecins pour organiser rapidement et efficacement le traitement des blessés.

Le Canada, dans cette période nucléaire, doit se préparer à affronter une guerre atomique. Cette préparation soulève plusieurs problèmes: il faut s'organiser pour prendre soin d'un grand nombre de blessés et en même temps pour maintenir en santé la population qui n'aura pas été touchée et prévenir les épidémies. Ces deux tâches sont immenses et des recherches entreprises dans ce domaine révèlent qu'il faut prendre dès maintenant des mesures adéquates pour mobiliser et utiliser toutes les ressources sanitaires disponibles au pays. Il s'agit d'abord de solutionner le problème des effectifs sanitaires qualifiés.

La profession médicale ne pourra pas, avec ses seules ressources, faire face efficacement à l'avalanche de traitements qu'exigera une guerre nucléaire; elle devra compter sur l'aide des professions-sœurs qui s'occupent de santé. L'Association dentaire canadienne, en collaboration avec le gouvernement fédéral et celui des provinces, a participé activement à l'élaboration de mesures de santé d'urgence. Les gouvernements provinciaux surtout ont la responsabilité d'organiser et de diriger le service de santé d'urgence; mais leur organisation aurait peu d'effet, au cours d'une catastrophe nationale, si les municipalités n'ont pas songé à ce problème et si chacun des

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travailleurs de santé n'a pas un rôle défini à remplir. Aussi, je me réjouis que le *Journal de l'Association Dentaire Canadienne* prenne l'initiative d'alerter les dentistes au sujet de l'importance de cette situation et qu'il les renseigne sur les diverses mesures qui sont prises pour parer à cet état d'urgence susceptible de se produire dans notre pays, à l'occasion d'une attaque nucléaire.

Training Dentists for Emergency Service

H. K. BROWN,* D.D.S., D.D.P.H., Ottawa, Ontario

In 1959, the American Medical Association prepared a report on National Emergency Medical Care. This report, prepared in co-operation with the American Dental Association and other national agencies, stressed the need for dentists to receive training and become proficient in the practice of disaster dental surgery and in addition to receive such training in disaster medicine as will enable them to take effective lifesaving and first aid measures and to assist the medical profession by performing additional functions. This emphasis on the training of the dentist reinforces the views that the Canadian Dental Association expressed in its policy statement of 1951. In order to perform functions beyond the range of normal practice, the dentist must have a clear grasp of how to apply his basic discipline to the care and management of mass casualties. He must be ready and trained to fit his skills and experience smoothly into a complex organization.

It might come to pass, that given enough time, help and warning, the dentist could acquire such additional knowledge by on-the-job experience. However, it is extremely unlikely that such will be the case. The competence of the dentist,

who already possesses other basic qualities, would be increased greatly by special training in the principles, techniques and procedures of the emergency medical care of mass casualties.

Accepting this concept, we must then define the type and scope of training required as well as the means by which this training is achieved.

The dentist along with other citizens, has a basic responsibility to his family. No matter how much additional professional training he receives in preparation for an emergency role, he is unlikely to be available or efficient if the members of his family are in danger. Consequently as a first step, the dentist should procure information on family survival planning and train himself and his family in the essentials of personal survival. Such information is available locally and is discussed in more detail in the paper on "Protection of your Family."

Next in order is his responsibility to his community and beyond it. As a trained member of a health profession he can, through his office staff and also to some useful extent through his immediate family, become a source of official information and sound advice on steps to be taken in the event of disaster. Even his attitude toward systematic preparation for emergencies can have a significant

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psychological effect on the other members of his community.

He should acquire a working knowledge of the plans and organization of his local emergency measures organization and should receive a thorough grounding in the organization and operational planning of his municipal emergency health services. This could best be obtained through lectures to the local dental society or through short courses conducted by the municipal authorities. As health workers, our main concern will be the health problems created by the disaster. However, it is important for each of us to remember that our efforts will depend to a considerable degree for their success on other emergency services. We shall need the keenest appreciation and understanding of one another's problems, capabilities and limitations.

The first stage in the technical training of all dentists in mass casualty care should be an intensive course in the principles of first aid and in their practical application in life-saving and emergency care procedures. Such training could be provided by any one of several agencies. Emergency Health Services advocate the inclusion of this essential education in the undergraduate curricula of all dental schools. In addition, these schools in conjunction with the dental associations and health services could conduct short seminars and courses for the graduate dentist as part of the normal postgraduate educational programs. The local dental society could arrange for such training in conjunction with the emergency measures organization under the auspices of the St. John Ambulance. The Royal Canadian Dental Corps, recognizing the need for disaster training, has conducted a series of courses at the Royal Canadian Dental Corps School for dental officers and technicians. The courses were started in 1959 and are available to members of both the regular and militia military dental services.

This first aid training should be followed by professional instruction in the principles and techniques of emergency medical and surgical care. But here the

scope and type of training should be directed to fitting the dentist to fulfil a specific role in an organization and consequently this training is best carried out by the professional members of the organization. Training would be conducted as required in the various functional areas such as:

Casualty reception and sorting,
Resuscitation,
Analgesia and anaesthesia,
Basic operative procedures, and
Advanced nursing procedures.

Dentists who have specialized training and experience might well be trained to assist in carrying out certain additional functions:

Medical planning, operations and administration,
Organization and administration of emergency medical units,
Organization and administration of municipal medical services, and
Public health planning, operations and procedures.

The organization, development and carrying out of a program of training for dentists on the lines suggested will be a major undertaking. But any program attempting to do less would be unrealistic and would fail to develop fully the potential usefulness of the dentist. The success of this program will require close co-operation between the dental and medical professions at all levels of their respective associations, and will require the assistance of the medical and dental schools.

Many persons and associations will plead lack of time, pressure of other urgent professional matters and a hundred other reasons for not undertaking such training. The need however remains and the responsibility for success or failure will rest, in the final analysis, on the individual members of the local dental societies.

*Department of National
Health and Welfare*

Formation des dentistes pour les services d'urgence

par H. K. BROWN,* D.D.S., D.D.P.H., Ottawa, Ontario

Dès 1959, l'Association médicale américaine préparait un rapport sur les soins médicaux d'urgence au palier national. Ce rapport, préparé en collaboration avec l'Association dentaire américaine et d'autres organismes nationaux, met en relief que les dentistes devraient, d'une part, acquérir les connaissances et la formation nécessaires pour pratiquer la chirurgie dentaire d'urgence et, d'autre part, recevoir une formation suffisante, sur les services médicaux en cas de désastre pour leur permettre d'appliquer les mesures de premiers soins et de sauvetage dans ces circonstances, et d'aider ainsi la profession médicale en exerçant des fonctions supplémentaires. Cette mise en valeur du rôle des dentistes renforce encore l'opinion de l'Association dentaire canadienne exposée dans une ligne de conduite formulée en 1961. Pour exercer des fonctions qui dépassent les cadres de sa pratique normale, le dentiste doit bien comprendre comment appliquer ses connaissances fondamentales au soin et au traitement des nombreux blessés à prévoir dans une catastrophe. Il doit être préparé par une formation précise à intégrer sa propre expérience et son habileté, facilement et sans heurts, dans une organisation complexe.

Bien entendu, il se peut que, s'il est prévenu assez longtemps d'avance et qu'il ait l'aide voulue pour s'y préparer, le dentiste soit capable par lui-même d'acquérir par la pratique et, pas à pas, les connaissances supplémentaires dont il s'agit ici. Mais une telle éventualité est extrêmement improbable. Par conséquent, le dentiste, qui possède déjà des qualités

fondamentales, augmentera beaucoup sa compétence et son utilité éventuelle en acquérant dès maintenant une formation spéciale sur les principes, les méthodes et procédés des soins médicaux d'urgence applicables en cas de catastrophe.

Dans cette optique, il nous faut d'abord définir la nature et les cadres de la formation requise, ainsi que les moyens de la réaliser.

A l'instar de ses concitoyens, le dentiste se doit d'abord à sa famille. Quelle que soit la formation supplémentaire reçue en prévision d'une catastrophe, il est peu probable qu'il soit à la hauteur de sa tâche, et il ne sera peut-être même pas là, si sa famille est en danger. Aussi, le premier pas est-il de se procurer les renseignements publiés sur les plans de survivance des familles, d'apprendre lui-même et de faire apprendre aux siens les techniques fondamentales de survivance. Ces renseignements peuvent s'obtenir dans sa propre localité et sont expliqués en détail dans la publication intitulée *Protection of Your Family*.

Mais, en second lieu, vient sa responsabilité envers son entourage et la société au delà de son milieu. A titre de membre des professions qui s'occupent de la santé, il peut, par l'entremise de son personnel et dans une certaine mesure, de sa famille, constituer un centre de renseignements officiels et de conseils judicieux sur les mesures à prendre en cas de sinistre. Même son attitude à l'endroit des préparatifs systématiques en cas d'urgence peut exercer une heureuse influence sur ses voisins et ses concitoyens.

Il devrait se familiariser avec les plans et les préparatifs de son Organisation locale des mesures d'urgence et connaître à fond l'organisation et les plans prévus

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par les services de santé municipaux dans sa ville. Le meilleur moyen d'acquérir ces connaissances serait des conférences données à l'association locale des dentistes, ou une série de cours abrégés donnés par les autorités municipales. Puisque nous nous occupons de la santé, nous nous intéresserons surtout en premier lieu aux problèmes de santé créés par le désastre. Mais il ne faut pas non plus perdre de vue que le succès de nos efforts dépendra, dans une large mesure, de l'efficacité des autres services d'urgence. Il nous faudra bien comprendre et apprécier les difficultés les uns des autres, de même que nous rendre compte de nos aptitudes et de nos limitations.

La première étape de la formation technique des dentistes, pour soigner les nombreux blessés, devrait être un cours condensé sur les notions fondamentales de premiers soins et l'application pratique des mesures de sauvetage et de soins d'urgence. Plusieurs organismes donnent déjà ces cours. Les Services de santé d'urgence conseillent d'ajouter des cours sur ces notions fondamentales au programme de toutes les écoles de chirurgie dentaire. De plus, ces écoles devraient organiser, en collaboration avec les associations de dentistes et les services de santé, des journées d'étude ou des cours abrégés pour les dentistes diplômés. Ces cours feraient alors partie du programme régulier de formation postgraduée. La société locale des dentistes pourrait organiser des cours de ce genre, en collaboration avec l'Organisation des mesures d'urgence et sous les auspices de l'Association ambulancière St-Jean. Se rendant compte qu'une formation spéciale en cas de désastre était nécessaire, le Corps Dentaire Royal Canadien a donné une série de cours spéciaux à cet effet à l'Ecole d'art dentaire pour officiers dentistes et techniciens. Ces cours se donnent depuis 1959 et sont offerts à tous les membres des Services dentaires, civils ou militaires.

Cette formation en premiers soins doit être suivie de cours, à l'échelon professionnel, sur les principes et techniques

de la médecine et de la chirurgie d'urgence. Mais, ici, l'enseignement doit viser à rendre le dentiste apte à remplir un rôle précis dans l'organisation des services d'urgence. Par conséquent, il vaut mieux qu'il soit donné par les membres professionnels de l'organisation. Les cours devront, au besoin, comprendre la formation qui permettra au dentiste de remplir des fonctions précises, notamment:

- La réception et le triage des blessés
- La réanimation
- L'analgésie et l'anesthésie
- Les techniques chirurgicales fondamentales
- Les techniques de nursing avancé.

Les dentistes qui ont déjà une formation ou une expérience particulière pourraient bien être préparés à d'autres fonctions, telles

La planification des soins médicaux, du fonctionnement général et de l'administration

L'organisation et l'administration des unités médicales d'urgence

L'organisation et l'administration des services médicaux municipaux

La planification et la mise en œuvre des services d'hygiène publique.

Ce sera une entreprise d'envergure que de formuler et mettre en œuvre un programme de formation des dentistes pour répondre aux besoins signalés ci-dessus. Mais tout programme qui viserait moins haut, non seulement ne serait pas réaliste, mais n'arriverait pas non plus à utiliser pleinement les services que peuvent fournir les dentistes. Le succès d'un tel programme exigera une étroite collaboration entre les professions médicale et dentaire, à tous les paliers de leurs associations respectives, ainsi que l'aide active des écoles de médecine et de chirurgie dentaire.

Bon nombre de personnes et d'associations allégeront le manque de temps, l'urgence de leurs affaires professionnelles

et une foule d'autres raisons pour ne pas entreprendre cette formation supplémentaire. Cela n'en écarte pas la nécessité et, en dernière analyse, la responsabilité du succès ou de l'échec de cette entreprise

reste entre les mains des membres individuels des associations dentaires locales.

Ministère de la santé nationale
et du bien-être social

Role of the Dentist in a National Emergency

H. R. McLAREN,* D.D.S., D.D.P.H., Ottawa, Ontario

During the past five years emergency planners have conducted many studies on the magnitude of the problems facing the health services in the event of a nuclear attack on the North American continent. A recent study is depicted graphically in Figure 1.

This study employed the combination of factors which would produce the maximum workload. Alteration of any of the conditions selected such as size of weapon, lack of organized rescue, climatic conditions, or population characteristics might significantly increase the number killed but would reduce the quantitative requirement for health services. However, pre-emergency planning by the responsible agencies in each of the three functional areas concerned, could effect significant savings in lives and the reduction of suffering in the injured survivors.

With our present state of preparedness, we could expect, if our 16 major urban areas were attacked to-night:

Killed	2,500,000
Injured	1,250,000
Intact survivors	3,500,000
	7,500,000 at risk.

This presents a major problem in casualty care with approximately twelve times the normal population of our active treatment hospitals receiving injuries over a period of a few hours. Fifty per cent of the active treatment hospital beds are located in these urban areas, subject to damage and approximately 9,000 of the 20,000 physicians in Canada live in these cities.

But this is not the complete problem, for 3.5 million intact survivors in these cities and 11 million Canadians in other parts of the country would be at risk of injury from radioactive fallout. On any given day, about 7-8 million would be directly affected, with 5 million receiving sufficient injury to require medical care. Weather conditions at the time of attack would determine which segment of the population would be exposed to this preventable injury. These injuries would appear about the third day after the attack, reaching a peak about the twenty-first day.

And this is still not the complete problem for we could expect with the disruption of health services, that communicable disease would reach epidemic proportion by the thirtieth day and to this could be added the casualties from exposure and malnutrition.

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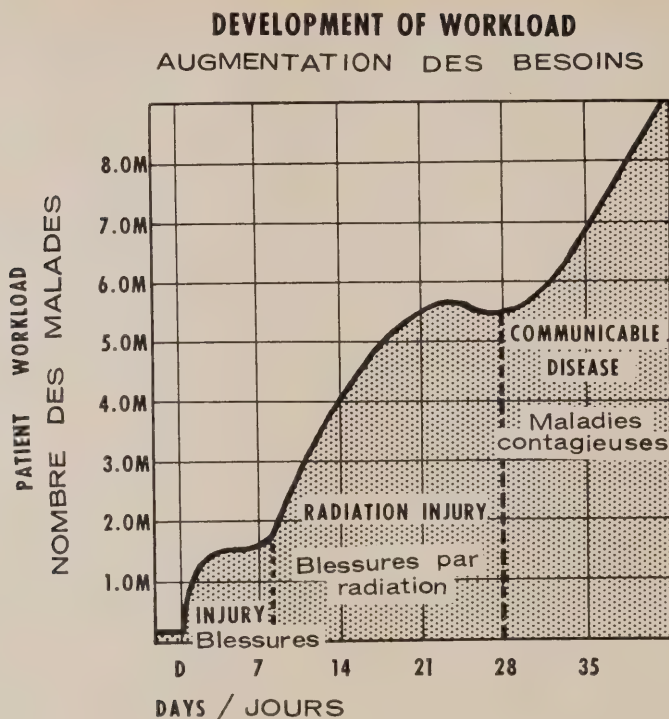


FIGURE 1

This study presents the catastrophic picture envisaged if the health services and other agencies are not prepared. This escalation of workload must not be permitted to occur, for if it does, we will have ceased to function as a responsible organized society. Plans made now for the use of the skills and resources of medical and allied professions will determine whether the country continues to exist or dies.

The immediate survival of an injured person will depend on his own ability to help himself or on the presence of other members of the family or neighbours who can administer life-saving first aid measures. This may be the only help available for a period of hours or even days. Subse-

quently he is dependent on the promptness and scale of the rescue and first aid services provided by the Mobile Survival Columns of the Canadian Army. His continued survival is then dependent on the ability of the casualty care teams in the medical units close to the scene of the disaster, to provide emergency medical care and transport to existing and emergency hospitals with the capability for life-saving surgery.

Obviously a great disparity exists between the large numbers of casualties predicted and the numbers of physicians that would be available to provide emergency medical and surgical care. Planning must provide means to reduce this disparity. If the casualty load cannot be

lessened, then the services of the physicians must be expanded by the use of other professionally trained health personnel as members of the treatment team.

The dental profession is a logical source of reinforcement of the physicians and surgeons for mass casualty care. The professional training of the dentist more closely parallels that of the medical profession than is the case of any other group. Numerically, dentists constitute the largest group of professionally trained workers next only to the medical and nursing groups. The dentist-physician ratio at present is 1:3.

It is true that in a national emergency, the average dentist will encounter problems outside and beyond his range of normal day-to-day experience; but then who amongst us won't? On the other hand, the training, skills and practice experience of Canadian dentists have prepared them uniquely for the additional training required to enable them to share the load.

What are some of the attributes of the average dentist that have a bearing on the expansion of his functions to serve as a member of the emergency medical team? First, as an undergraduate, he received training in the basic medical sciences. He was trained in the principles of medicine and surgery, in the administration of anaesthetics, in pharmacology and radiology. He began as a senior student to learn the art of patient care. Then as a practising dentist he acquired skill and experience in treating patients, not infrequently under extreme conditions of pain and infection, in the control of haemorrhage, in treatment of shock and in the reduction and immobilization of fractures.

Many Canadian dentists have taken specialized training in a variety of fields ranging from anaesthesia to public health. All of these functions are essential in the emergency situation. Finally, as a result of their training and practical experience dentists characteristically possess a high degree of manual dexterity which enables

them to master new technical procedures relatively quickly.

This concept of employment of dentists in an expanded role is not new. In World War II and again in Korea, dentists serving with medical units participated willingly in the emergency medical care of the injured during the periods of intense activity. It is worthwhile to note that almost half of the members of the dental profession have served in the armed forces.

In 1951, the Canadian Dental Association issued a statement of policy on Civil Defence. The Association considered that dentists could best serve as members of the casualty care team along with medical, nursing and other personnel and that those members of the profession having specialized training and experience should be assigned to posts where their services could be utilized to greatest advantage. The Canadian Dental Association stressed the fact that further training was required to fit the dentist for his duties and responsibilities in casualty care and recommended that such training be carried out in a representative team arrangement.

This general statement holds true today and could only be improved, perhaps, by a clear definition of the functions the dentist would be expected to perform. However, the assignment of a specific role to an individual dentist is entirely dependent on the state of organization of the emergency health services in the community. While this phase of planning has developed exceedingly slowly, Emergency Health Services anticipate that the increased emphasis on hospital and municipal disaster planning will result in the near future, in the closer integration of the dental profession and the individual dentist with the treatment and health teams of the community.

CONCLUSION

The dental profession have the basic capability which permits the expansion

of their normal functions in time of emergency. The efficient use of these dentists, however, is dependent on the development of an organization in which they can be assigned a specific role and

through which they can receive the additional training needed to fit them for their responsibilities.

*Department of National
Health and Welfare*

Rôle du dentiste au cours d'une urgence nationale

par H. R. McLAREN,* D.D.S., D.D.P.H., Ottawa. Ontario

Depuis cinq ans, les organismes qui s'occupent des préparatifs d'urgence ont fait beaucoup d'études sur l'importance des problèmes que les services de santé auront à résoudre, advenant une attaque nucléaire sur le continent nord-américain. La figure 1 illustre une de ces études récentes.

Dans cette étude, on a réuni les facteurs qui représentent la charge de travail. Toute modification dans n'importe laquelle de ces conditions, soit dans le calibre de l'arme, l'absence de sauvetage organisé, les conditions climatiques ou les caractères de la population, pourrait augmenter beaucoup le nombre des morts, mais diminuerait le fardeau imposé aux services de santé. Par conséquent, si les organismes responsables font les préparatifs nécessaires dans chacun des trois domaines en cause, ces préparatifs pourraient sauver un grand nombre de vies humaines et soulager beaucoup les souffrances des blessés.

Dans l'état actuel de nos préparatifs, si nos seize grands centres urbains étaient attaqués ce soir, il faudrait s'attendre à

2,500,000 morts,
1,250,000 blessée et
3,500,000 survivants sains et saufs, sur
7,250,000 personnes exposées.

C'est là un problème majeur en soins des victimes, puisque cela veut dire qu'environ douze fois le nombre habituel de nos malades hospitalisés deviendraient subitement des blessés dans l'espace de quelques heures. De plus, 50 p. 100 de nos lits d'hôpitaux sont justement dans ces centres urbains, donc exposés aux mêmes risques, et 9,000 des 20,000 médecins au Canada habitent ces mêmes villes.

Mais, le tableau n'est pas encore complet car les trois millions et demi de survivants non blessés et les onze millions de Canadiens dans les autres parties du pays, seront exposés ensuite à la retombée radioactive. A n'importe quel jour donné, sur les 7 à 8 millions de personnes qui y seraient exposées, 5 millions environ seraient affectées assez gravement pour avoir besoin de soins médicaux. Les secteurs de population atteinte par ce mal évitable seront en fonction des conditions climatiques au moment de l'attaque. Ces atteintes sont à prévoir vers le troisième jour après l'attaque et le risque augmente par la suite pour atteindre son apogée vers le 21^e jour.

Et ce n'est pas encore tout, puisqu'il faut prévoir aussi qu'avec la désorganisation des services d'hygiène publique, les maladies transmissibles peuvent atteindre des

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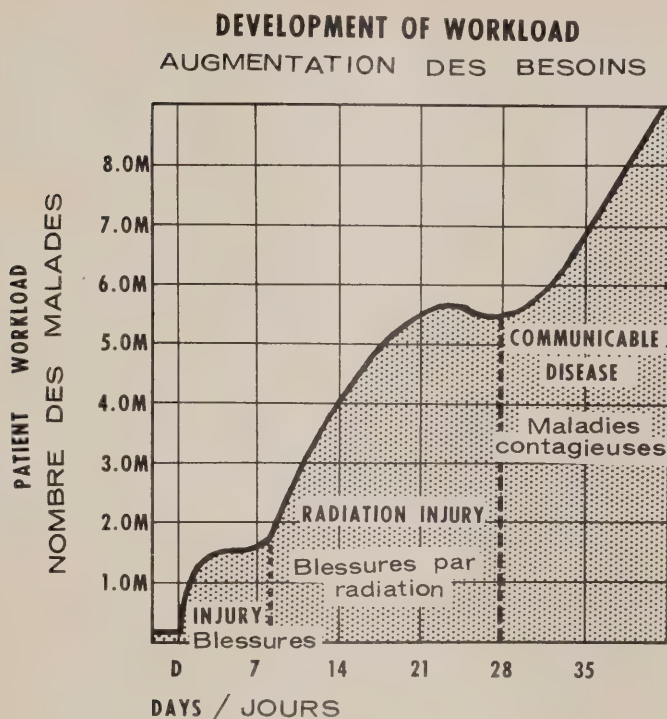


FIGURE 1

proportions épidémiques vers le 30^e jour, et qu'à tous ces malades s'ajouteront de nombreux cas de dénutrition et d'affections dues à la fatigue et aux intempéries.

Cette étude brosse donc le tableau tragique à envisager si les services de santé et autres organismes ne sont pas préparés. Il ne faut pas permettre à cette somme effroyable de travail de s'accumuler, car alors nous aurions cessé de fonctionner comme société responsable et organisée. Les plans prévus maintenant pour utiliser les ressources et les aptitudes des professions médicale et paramédicale seront le facteur décisif dans la survivance nationale.

La survie des blessés juste après l'attaque dépendra de leur propre capacité de s'aider eux-mêmes ou de la présence des

membres de la famille ou des voisins pour appliquer les mesures de sauvetage. Cette aide sera peut-être la seule disponible pour plusieurs heures, voire plusieurs jours. Plus tard, la survie des blessés dépendra de la promptitude et de l'ampleur des mesures de premiers soins fournies par les colonnes mobiles de survie de l'armée canadienne. A l'étape suivante, la survie dépendra de l'aptitude des équipes de soin des blessés dans les centres médicaux, près de la scène du désastre, à fournir les soins médicaux d'urgence et transporter les blessés aux hôpitaux improvisés ou permanents, où l'on pourra enfin pratiquer la chirurgie requise pour sauver définitivement ces blessés.

Evidemment, il y a une marge pénible entre le grand nombre de blessés prévus et

le nombre de médecins disponibles pour administrer les soins médicaux et chirurgicaux d'urgence. La planification doit justement trouver moyen de réduire cette marge. S'il est impossible de diminuer le nombre des blessés, les services des médecins pourront en atteindre un plus grand nombre si les équipes de traitement utilisent les services d'autres personnes qui auraient une formation professionnelle à cet effet.

La profession dentaire est la source logique de renfort des médecins et des chirurgiens, en face du grand nombre de blessés dans une telle urgence.

Plus que dans toute autre profession, la formation du dentiste se rapproche de celle du médecin. Quant au nombre, les dentistes occupent le premier rang après les médecins et les infirmières parmi le personnel professionnel. A l'heure actuelle, il y a un dentiste pour trois médecins.

Bien entendu, dans une urgence nationale, le dentiste sera en face de situations qui dépassent les cadres de son expérience habituelle, mais il en sera ainsi pour nous tous. D'autre part, la formation, les aptitudes et l'expérience pratique des dentistes au Canada les ont préparés mieux que tout autre à recevoir la formation supplémentaire qui leur permettra de porter leur part du fardeau.

Quelles sont les qualités du dentiste ordinaire qui peuvent lui permettre d'étendre ses fonctions habituelles pour faire partie de l'équipe médicale d'urgence? D'abord, il a appris, dans son cours d'étude, les éléments des sciences médicales. Il connaît les principes de la médecine et de la chirurgie, de l'anesthésie, de la pharmacologie et de la radiologie. Vers la fin de son cours, il a fait du travail clinique et appris l'art de soigner les malades. Plus tard, dans l'exercice de sa profession, il a acquis plus d'expérience et d'habileté à soigner les malades, assez souvent des malades extrêmement souffrants ou des cas d'infection grave; il est habitué à arrêter les hémorragies, traiter les états de choc, réduire et immobiliser les fractures.

En outre, un grand nombre de dentistes au Canada ont suivi des cours spécialisés dans plusieurs autres disciplines, à partir de l'anesthésie jusqu'à l'hygiène publique. Ces fonctions seront toutes essentielles dans une urgence nationale. Enfin, par suite de leurs études et de leur expérience pratique, les dentistes ont beaucoup d'adresse manuelle, ce qui leur permet d'apprendre relativement facilement les techniques nouvelles.

L'idée d'élargir les cadres des fonctions confiées aux dentistes n'est pas nouvelle. Pendant la deuxième guerre mondiale et la guerre de Corée, les dentistes des unités médicales ont bien volontiers aidé les médecins à soigner les blessés dans les moments d'urgence. Fait intéressant à signaler, près de la moitié des membres actuels de la profession dentaire ont fait du service militaire.

En 1951, l'Association dentaire canadienne a formulé ses lignes de conduite en matière de défense civile. L'Association croit que les dentistes seraient le plus utiles comme membres des équipes d'urgence, aux côtés des médecins, des infirmières et autre personnel sanitaire, et que tous ceux qui ont une expérience ou une formation spécialisée devraient être assignés à des postes où leurs aptitudes seront pleinement mises à profit. L'Association dentaire canadienne insiste sur la nécessité d'une formation particulière pour préparer le dentiste à assumer les responsabilités et les tâches qu'il aurait à remplir en ce sens et recommande que les cours soient donnés par des équipes appropriées.

Non seulement cette déclaration tient-elle toujours aujourd'hui, mais elle ne pourrait guère être améliorée, sauf peut-être en définissant avec plus de précision les rôles que l'on voudrait confier aux dentistes. Cependant, toute fonction précise confiée à un dentiste en particulier dépend essentiellement de l'organisation d'ensemble des services d'urgence dans sa localité. Même si cet aspect du programme a été mis au point avec une extrême lenteur jusqu'ici, on croit, aux Services de santé d'urgence, que la propagande sur

les préparatifs de désastre dans les hôpitaux et les services municipaux produira dans un avenir assez rapproché une meilleure intégration des dentistes et de la profession dentaire dans les équipes de traitement médical et de santé dans chaque localité.

CONCLUSION

La profession dentaire possède les qualités fondamentales requises pour

élargir les cadres de ses fonctions ordinaires advenant une situation d'urgence. Toutefois, ces qualités ne seront mises à profit que dans la mesure où sera réalisée une organisation, par laquelle on pourra assigner à chaque dentiste un rôle bien précis et lui fournir la formation supplémentaire requise pour le préparer à ces responsabilités nouvelles.

*Ministère de la santé nationale
et du bien-être social*

Civil Emergency Planning

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The federal government's general approach to national survival planning is based upon the threat of nuclear war. Public opinion in Canada on this question tends to wax and wane. But those who best know conditions in the world today conclude that the threat is a continuous one and that in spite of all the dedication of this nation to peace and the never-ending efforts of our leaders to find peaceful solutions, war may come. If it does, it is likely to be nuclear in character. Both sides have the capacity to wage all-out nuclear war and even though such a cataclysmic result might not come by design, it is altogether possible for war to begin through miscalculation.

Many people in Canada throw up their hands and declare that nuclear war would be so awful that it just couldn't happen, that people and governments just wouldn't let it occur because it would be

so devastating in its character. If the making of war were the responsibility of reasonable, sensible and intelligent people alone this would probably be a logical conclusion. However, wars do not usually occur as the result of the actions of reasonable, logical and intelligent people. They may arise from the centre of Africa, or Asia, or a mad Austrian painter named Hitler, or from a relatively unknown archduke whose assassination marked the start of the first world war. Wars often occur through unforeseen happenings and they can occur even by accident. Therefore, it does little good to be so completely intelligent and coldly logical as to maintain that governments must not allow war to happen because it is so awful.

In a nuclear war Canada would certainly be engaged, not only because she is squarely between the two great and opposing powers, but because she is a part of the Western Alliance. Our geography is a peril to us in some ways, as an air

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battle may be fought in large part over our territory. But the vast reaches in Canada also provide the asset of a relatively dispersed population.

Questions arise as to the likely target areas in Canada and the consequent direct threat of blast and fire. On the whole our largest cities would appear to rank below certain potential targets in the United States, including the retaliatory bases and the great centres of production of military hardware. Canadian cities also are outranked on the basis of population and of general industrial production by numerous United States centres.

Nevertheless, Canada has some fairly likely targets. And no one should downgrade the price Canada would pay if nuclear war should come to us either directly, or as an ally of the United States, or simply as a country nearby very likely targets on the North American continent. The price would be very heavy indeed. Some Canadian cities might suffer horribly. Many people would lose their lives, a great deal of property damage undoubtedly would ensue. But that price would be cut back very substantially by adequate planning and preparation. The objective of national survival planning is to reduce that price, should war come to this country.

FEDERAL PLANNING

Let us examine some of the planning carried on by governments at all levels, in order not only to cut the price we would pay, but also to reduce the threat of war. A thoughtful and intelligent potential enemy would be less likely to attack a country knowing that that country has made its emergency plans and preparations. In 1957, as the result of a thorough review, the federal government came to the conclusion that the base of civil defence at the federal level had to be widened. The Canadian Army was directed to assume certain functions including the warning of attack, re-entry operations and other vital functions for

which it is well qualified. The Department of National Health and Welfare, logically, was instructed to concentrate on the fields of emergency health and welfare; the Department of Justice to take responsibility for the Royal Canadian Mounted Police activities in aiding the provincial authorities in the maintenance of law and order; the Department of Transport to control all transport including marine, rail, air, highway and meteorological services; the Department of Defence Production to develop a supply and control organization for wartime management, allocation, distribution control and allocation in wartime of manpower. Briefly, all the federal departments that have wartime responsibilities have prepared plans to meet those responsibilities.

The Prime Minister's Office, through the Emergency Measures Organization, is responsible for co-ordinating the survival planning not only of all federal departments but also of the provinces. The Prime Minister authorized the setting up of a Cabinet Committee of eight ministers, who meet frequently to deal with all aspects of emergency planning. Thus national survival planning at the federal level has the required attention of responsible ministers of the Crown and it is based on full cabinet authority.

It is not possible in the space available to describe in detail the plans made by all departments, but a few examples will serve to indicate some of the progress that has been made. A workable emergency broadcasting system, including, with few exceptions, all standard band radio stations, frequency modulation stations and television stations is near completion. Under this plan, after the sounding of a national alert by the Army, almost every broadcasting station would be connected to this system. The federal government has created and is creating facilities at which government personnel, federal and provincial, in a wartime emergency will be located. These facilities are in being in the general Ottawa area and in some cases are now ready in the

provinces. Further facilities in the provinces still must be constructed although where such permanent installations do not now exist, interim installations have been established. The Army's Attack Warning System is steadily being developed and federal and provincial warning centres are established and functioning in locations outside likely target areas. The siren installations are being extended to ensure adequate coverage and a Nuclear Detonation and Fallout Reporting System, which until now has had a limited capability, is to be further expanded. More than 200,000 Canadians have been trained in the various skills required in the battle for survival. Readers of the *Journal of the Canadian Dental Association* will be particularly interested to know that 520 physicians and 115 dentists have participated in civil defence training at the Canadian Civil Defence College in Arnprior.

PROVINCIAL AND LOCAL RESPONSIBILITIES

While the conduct of war is a federal responsibility, the details that grow out of that conduct are in many respects provincial in character. The provinces recognize that such matters as the preservation of law and order within the province, the maintenance of highways and bridges, the matter of health, of energy resources and controls within the province, are provincial responsibilities. These are just as important within their geographical limits as are federal responsibilities for the country as a whole. As a result of a series of federal-provincial conferences on civil defence, complete agreement and understanding as to the relative wartime responsibilities of the federal and provincial governments has been reached.

At one time the development of plans and preparations against the possible outbreak of nuclear war may have been thought of as a part-time job for semi-retired individuals. That is not true now. Today all responsible departments of government have people giving full-time

effort, on the most urgent basis, to the plans that they must make for government and the people governments serve. While federal and provincial governments have vast responsibilities here, in many ways the real problems are local and the importance of local government giving prime attention to emergency planning cannot be over-emphasized. In the final analysis, the survival of Canada and her people would depend largely on the kind of plans made by our cities and towns, our counties, our municipal governments.

The first responsibility of government in such planning is for the survival of people. Extremely important issues have had to be faced, such as the relative merits of evacuation or dispersal as compared to a "stay-put" plan. The latter involves shelter in one form or another and here blast protection as compared with fallout protection must be considered. There are no simple answers because the factors at issue are extremely complicated. The problem is complex and the answer depends upon local characteristics of many kinds as it also depends on the nature and character of the attack.

Although there are many imponderables in nuclear and conventional war (no one can predict with certainty where a nuclear weapon will be exploded) this is no excuse for ignoring the problems and failing to make plans to meet them. When such conditions exist, planners develop basic assumptions from which they work on those areas of a problem where facts are unobtainable or do not exist. An assumption is nothing more than a best estimate of a probable situation or happening based on accumulated knowledge and analysis of known facts. As new facts come to light or as knowledge improves, assumptions may have to be changed.

The federal government has made available to municipalities a survival planning guide which includes basic assumptions. It is designed to assist municipalities, large and small, in taking effective action in national survival planning. For example, each so-called target

area must have plans tailored to its own circumstances, that will permit numbers of its people either to disperse or to remain, with a certain amount of protection, if the brevity of warning time so dictates.

Once again it should be emphasized that these emergency planning and civil defence services are best built into existing municipal agencies. In other words, the matter of fire is the business of the fire chief and his staff; the matter of policing belongs to the police department; welfare to the welfare department and health to the health department. When this is recognized, civil defence becomes a useful asset to the municipality.

In order to assist the provinces, and through them the municipalities, to expand their civil defence activities, the federal government established the Financial Assistance Program. Civil defence projects at the provincial or municipal level are put forward to the Emergency Measures Organization. Subject to receiving approval, up to 75 per cent of the cost of these projects is reimbursed by the federal government.

INDIVIDUAL RESPONSIBILITIES

But important as government emergency planning may be, action on the part of individuals and families is vital to effective civil defence. There are many things that governments can do and must do for our people but there are many things that people as individuals can do for themselves. The whole burden is not solely that of government. There is a tendency on some occasions for people to lean unduly on government and forget individual initiative and action. For example, individuals and families can do much to provide protection against radioactive fallout.

In order to provide Canadians with the best available advice, the federal government has produced a series of pamphlets entitled *Blueprint for Survival*. This series as well as other EMO publica-

tions contain information and advice that is as factual as present knowledge permits. Prior to publication, drafts of each are reviewed by scientists and technical experts qualified in the particular subject, and every effort is made to present the information in language that will be understood.

All of the publications are available free and a letter addressed to EMO, P.O. Box 10,000, in the capital city of the writer's province, will bring a copy. The titles of the available publications are: *11 Steps to Survival*; *Your Basement Fallout Shelter* (for existing homes); *Basement Fallout Shelter* (for those planning a new home); *Simpler Shelters*; *Fallout on the Farm*; *Survival in Likely Target Areas*; and *Blast Shelters*.

This article has emphasized some aspects of national survival planning designed to ensure the survival of people and the continuity of government. A third important aspect of survival in nuclear war is the survival of industry. Industry as well as governments and people must play an active part if Canada is to be capable of recovering from a nuclear attack. And the problems of industry in such an emergency are not unlike those of government. They tend to break down into the following areas: the protection of personnel; possible protection of plant and equipment; continuity of management and the safety of essential records.

Not only must governments, people and industry, prepare plans, they must constantly keep those plans under review. National survival planning does not stand still. It must keep pace with changing technology such as the increased efficiency of weapons delivery systems and new knowledge. A new concept of survival planning has been developed since the advent of nuclear weapons. Studies of the effects of these weapons on cities have shown that such chaos could result as to jeopardize the national ability to survive attack unless substantial preparations to this end have been made beforehand. More important, perhaps these same studies have revealed that survival

plans and preparations cannot be left until attack appears imminent; they must be developed as part of the normal peacetime processes of government, industry and community life.

RÉSUMÉ

Le bureau du premier ministre, par l'entremise de l'Organisation des mesures d'urgence, coordonne l'organisation de survie non seulement des Ministères fédéraux, mais aussi celle des provinces. Un comité composé de huit ministres fédéraux se réunit fréquemment pour scruter tous les angles de l'organisation en cas d'urgence.

On est à mettre la dernière main à un système d'émission radiophonique d'urgence qui rejoint à la fois tous les postes ordinaires de radio, les postes à fréquence modulée et les postes de télévision. Ainsi la presque totalité des postes émetteurs seront, dans les quelques minutes qui suivront une alerte signalée par l'armée, reliés à ce système.

On est à mettre au point une méthode par laquelle l'armée pourra avertir la population dans des endroits présumés hors des régions susceptibles d'être attaquées; on y établira des centres fédéraux et provinciaux d'où partiront des signaux d'alerte. On installe des sirènes dans des rayons plus étendus pour s'assurer de bien transmettre les messages. Plus de 200,000 Canadiens ont été entraînés à remplir diverses fonctions essentielles dans cet effort de survie. Cinq-cent-vingt médecins et cent-quinze dentistes ont pris part à des cours sur la défense civile au Collège canadien de la défense civile, à Arnprior.

L'état de guerre est avant tout une responsabilité fédérale, mais, dans ses détails, il a des implications provinciales. C'est pourquoi, à la suite de rencontres entre les autorités fédérales et les au-

torités provinciales, on s'est entendu pour répartir les tâches en cas de conflit national. Le gouvernement fédéral, pour aider pécuniairement les provinces et, par elles, les municipalités à organiser leur défense, a créé le Programme d'assistance financière. Les projets que formulent les provinces et les municipalités en matière de défense civile sont soumis à l'Organisation fédérale des mesures d'urgence. Le gouvernement d'Ottawa, sur acceptation de ces mesures, remet jusqu'à 75% de leur coût.

Les autorités fédérales et provinciales ont certes de grandes responsabilités dans ce domaine, mais ces mesures d'urgence ont surtout un caractère local; les autorités locales doivent donc mettre tout en oeuvre pour établir des mesures d'urgence dans leur secteur. C'est par le truchement d'organismes déjà existants que les municipalités peuvent de la façon la plus efficace organiser les mesures d'urgence et la défense civile. En d'autres mots, la question d'incendie regarde le directeur du service des incendies et son personnel; la protection des citoyens incombe au service de la police; le bien-être de la population est l'affaire du service social et la santé l'affaire du service de santé. Le problème de la défense civile, compris dans cette optique, peut se résoudre plus facilement dans les municipalités.

Le rôle des autorités dans l'organisation des mesures d'urgence est important; mais les individus et les familles doivent aussi collaborer à la défense civile. Le gouvernement fédéral, pour initier les Canadiens à la question de défense civile, a publié une série de fascicules intitulés "Formule de survivance." Cette série et d'autres de l'Organisation des mesures d'urgence contiennent des renseignements aussi complets que possible. Ces imprimés ne coûtent rien et on peut les obtenir en s'adressant à l'Organisation des mesures d'urgence, Casier postal 10,000, ville capitale de sa province.

Privy Council Office (EMO)

Emergency Health Planning

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Following the transfer in 1951, of the responsibility for civil defence from the Department of National Defence to the Department of National Health and Welfare, a civil defence health planning group was formed within the Health Branch. This group studied the health problems associated with the major threat of that time, namely the relatively small atomic bomb delivered by manned aircraft. In these studies, problems were referred to working parties selected from authorities on the particular subject. Information obtained by this and other means was provided to the health professions by means of articles, pamphlets, and manuals and through courses, conferences and institutes held across Canada.

The development of the large thermonuclear weapon in 1954 and new delivery systems caused a major revision of Civil Defence Health Services' policies and programs. This was followed in 1959 by a major re-organization of civil defence in which the Civil Defence Health Services became the Emergency Health Services Division of the Health Directorate of the Department of National Health and Welfare.

During this period, emergency health planning by provincial and municipal governments across Canada received widely varying degrees of emphasis with few concrete achievements.

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RESPONSIBILITY FOR EMERGENCY HEALTH SERVICES

In 1958, the Canadian government surveyed the civil defence situation across the country. This report was analyzed in the context of the total military and civilian arrangements necessary to prepare the country for the possibility of nuclear war. The government decided to re-organize civil defence following two major principles: that civil defence should be considered as a normal function or activity of government rather than a specialized organization, and that civil defence functions should be divided into clearly defined tasks and assigned to levels of government and at each level to those departments and agencies best suited to undertake and fulfill them.

In 1959, two federal-provincial conferences were held to discuss the responsibilities of the various levels of government. Amongst other emergency responsibilities that were considered to belong to the provincial authorities were:

The organization and control of medical services, hospitals and public health measures.

Organization of municipal and other services for the maintenance of water and sewage systems.

Training of civilians.

Reception services including arrangements for providing accommodation, emergency feeding and other supplies and welfare services for people who have lost or left their homes or who require assistance because of the breakdown of normal facilities.

In the Civil Defence Order-in-Council issued in September 1959, the Minister of

National Health and Welfare was charged with "the provision of advice and assistance to provincial and municipal governments and to others in connection with the organization, preparation and operation of medical, nursing, hospital and public health services."

The role of the Canadian Forces Medical Services in survival operations is related to the role of the Department of National Defence. Since the Canadian Army is responsible for the re-entry operation into disaster areas, the Surgeon General agreed that the Canadian Forces Medical Service should assist in the provision of early treatment to the injured. Close liaison is essential between the Canadian Forces Medical Service and the civilian emergency health authorities at all levels of government to avoid duplication of effort and to ensure the smooth transfer of casualties from the scene of the disaster to civilian medical facilities.

Municipalities are delegated responsibility by the provincial authorities for the organization and control of municipal health services within the framework of the provincial plan and with technical and financial assistance provided by the provincial and federal governments.

THE PLANNING ORGANIZATION

The Minister of National Health and Welfare, recognizing that his responsibilities for emergency health planning were too great to be assumed by the existing staff of his department, organized the Emergency Health Services Division as the Health Branch planning agency. In addition this Division is responsible for providing advice on emergency health matters to other governmental planning agencies.

Emergency Health Services Division consists of fifteen officers and some sixty staff on full-time employment. However, in the conduct of such planning, the Division uses the entire resources of the Health Branch as required. In addition, in each province, the Department has

appointed a federal employee as the Regional Emergency Health Services Officer. The services of these officers are available on a part-time basis.

The Minister of National Health and Welfare formed an Emergency Health Services Advisory Committee in 1961. This Committee consists of representatives of the national associations of the various health professions together with representatives of the Surgeon General, Canadian Forces Medical Service and the Director General of Dental Services for the Canadian Forces.

In November 1959, federal Emergency Health Services arranged a national conference on emergency health planning, at which time, the federal authorities recommended the establishment of a suitable planning staff by the provincial governments. Since then, eight of the provinces have organized full-time planning staffs and the remaining two provinces have designated officers on a part-time basis.

Most of the provinces have established an emergency health services advisory committee including representatives of the various provincial colleges, societies or associations.

The effect of this major achievement at the provincial level is reflected in the marked increase in the demands for advice and assistance from the municipalities. At least two major cities now have designated full-time planning staffs and many communities have assigned the responsibility for this function to the municipal medical officer of health.

EMERGENCY HEALTH SERVICES PROGRAMS

The activities of the emergency health services planning staff at the various levels of government can be broadly grouped into four major programs:

1. *Continuity of Government.*—Individual members of each family unit are respon-

sible for taking the necessary steps to ensure their personal survival during the immediate post-attack period. However, if we are to continue to survive as an organized society, we must ensure the continuity of governmental authority to provide for such things as equitable distribution of food stores, continuing health services, restoration of communications and transportation. Above all, we must provide for the continuance of leadership and guidance to our people.

The program is carried out by all essential departments of government. Alternate sites have been selected and are being prepared now for use in an emergency. Essential records and documents have been duplicated and legislation prepared. The staff for each site have been designated and are presently being trained for their emergency role.

At the national level there is one major centre for government designated as the National Site. Here governmental leaders will meet to carry out their emergency functions and prepare policy decisions. However, this site is not large enough for the operation of essential government departments. Consequently, departmental relocation sites are being set up throughout the Ottawa Valley where selected departmental officers will carry out their operational responsibilities.

At the provincial level, regional headquarters are under construction. These headquarters will house key officials of the provincial health agencies together with the federal Emergency Health Services officer and the military medical representatives. However, the provincial department of health must also establish a relocation site from which the operations of the provincial health services will be directed.

Since it would be extremely difficult to direct all the municipal civil defence organizations from one regional headquarters, most provinces have established zone headquarters to provide an intermediate level of command and control. These headquarters require a medical staff to direct the provincial emergency health services.

In most municipalities, governmental functions would be carried out in the normal location. However, in sixteen potential target cities, alternate sites of municipal government are being prepared. To support re-entry operations in these areas, the Canadian Army has prepared sixteen target headquarters. Municipal and provincial emergency health representatives are being assigned to these headquarters.

This program has been designed to ensure continuity of government at the federal, provincial and municipal levels. Emergency health services staff must be prepared to ensure the maximum use of our surviving health resources in the post-attack period.

2. Organization Programmes.—The previous program will be of very little use, unless health services are organized at the community level. In this organizational program we have followed certain basic principles. Existing health agencies and organizations are the basic structure for an emergency service. In a community, the two types of organization suitable for emergencies, are the hospitals and the departments of health.

The first project in this program was the stimulation of hospitals to carry out disaster planning. Approximately fifty per cent of hospitals to date have developed reasonable plans, and emphasis on this phase is continuing.

The second phase of the program entails the action of municipal health authorities in preparing a community disaster plan. Such a plan must provide for the co-ordination of hospital plans for casualty care as well as the preventive health measures to be instituted by the departments of health. Community planning provides the method of affiliation of health workers to a specific organization within which they perform their emergency function.

3. Information and Education Programs.—Information and educational programs

directed at the general public are designed to make the family unit self-sufficient for the first seven to fourteen days of a national emergency. Information on measures to deal with likely health hazards is provided through brochures, pamphlets, displays and other media of communication. In addition we place great emphasis on a comprehensive first aid and home nursing training program. In the past five years, approximately 500,000 lay persons have been trained under the auspices of the St. John Ambulance Association and negotiations are under way to have such training incorporated in the curricula of high schools.

Information and educational programs directed at the health worker have been developed in two distinct areas. It is unreasonable to expect any individual to perform an emergency function if his family is in danger. Consequently, with the co-operation of the various national and provincial associations of the health professions, information on family survival planning is made available to the members of that profession.

The second area involves the training of workers in the professional aspects of their emergency functions. This program is conducted at both the undergraduate and postgraduate level. Six of twelve medical schools presently teach some aspects of emergency medical care and measures are underway to expand this project. All schools of nursing presently conduct some training in emergency nursing care and we hope to improve and standardize this teaching. Suitable training is presently being incorporated in curricula for sanitary inspectors and other health workers.

The major problem rests in the field of postgraduate education. The bulk of this training to date has been carried out centrally at the Civil Defence College, but during the past year, provincial health authorities have expanded this program by means of courses, seminars and institutes conducted within the provinces.

4. *National Health Stockpile Program.*—The first three programs are directed to the organization and training of emergency health services agencies. The fourth program provides the essential supplies.

The federal government has authorized the establishment of a national stockpile of health supplies and equipment amounting to some \$18,000,000. To date, Emergency Health Services have received stores to the value of \$12,000,000. These have been packaged and distributed to regional depots across the country. Orders have been placed for an additional four million dollars.

This stockpile contains both packaged units and bulk resupply items designed to provide medical care for 200,000 casualties. The packaged units consist of hospital disaster kits, advanced treatment centres, 200-bed emergency hospitals, public health laboratories and blood transfusion depots.

Maintenance of these stocks in regional depots does not ensure their ready availability in time of emergency. Agreement has been reached with seven of the provinces for the release of hospital disaster kits to hospitals within the province who possess an approved disaster plan. In addition, negotiations are underway for the release of other packaged units as the emergency organizations are developed.

CONCLUSION

In this paper, the development of emergency health planning has been discussed with an outline of the responsibilities of government. Emergency planning by federal and provincial health agencies is futile unless the individual members of the health professions are ready to undertake their individual, family and community responsibilities to prepare for a national emergency.

RÉSUMÉ

Le gouvernement canadien décidait, en 1958, de réorganiser la défense civile en établissant deux principes: (1) le gou-

vernement doit envisager la défense civile comme fonction ordinaire de ses attributions et non comme une tâche occasionnelle; (2) l'organisation de la défense civile doit se faire en compartimentant clairement ses éléments à différents niveaux des rouages du gouvernement et en confiant l'exécution de ses diverses fonctions aux ministères et aux agences les mieux qualifiés pour les entreprendre et les mener à bien.

Deux conférences fédérales-provinciales, tenues en 1959, ont établi les responsabilités appartenant aux autorités provinciales en cas d'urgence: (1) organisation et contrôle des services médicaux, hospitaliers et sanitaires; (2) organisation des services municipaux et autres pour maintenir les systèmes d'aqueduc et d'égout; (3) entraînement des civils; (4) services d'accueil comprenant l'organisation du logement, de l'alimentation, de l'assistance et des autres nécessités pour les personnes sans abri, qui ont besoin d'aide, à cause de la désorganisation des conditions normales de vie.

Le ministre de la santé nationale et du bien-être social a été chargé de "fournir des directives et de l'aide aux autorités provinciales et municipales et autres pour l'organisation, la préparation et le fonctionnement des services médicaux, infirmiers, hospitaliers et sanitaires."

Le rôle du Service médical des forces canadiennes, dans l'organisation de la survie, s'apparente à celui du Ministère de la défense nationale. L'armée canadienne, à cause de sa responsabilité de se rendre la première dans les secteurs dévastés est prête, grâce à son Service médical des forces canadiennes, à prodiguer les traitements précoces aux blessés.

Les municipalités, selon le plan établi au niveau des provinces et grâce à l'aide financière et technique qui lui est fournie par les autorités fédérales et provinciales, ont la responsabilité d'organiser et de surveiller les services municipaux de santé.

Une Division des services de santé d'urgence a été créée au sein du Ministère de la santé nationale et du bien-être social pour élaborer des projets. Un Comité consultatif des services de santé d'urgence a été constitué en 1961. Ce comité se compose de délégués des associations nationales qui s'occupent de santé et de représentants du Chirurgien-Général du Service médical des forces canadiennes et du Directeur général des services dentaires des forces canadiennes.

La plupart des provinces ont formé un comité consultatif des services de santé d'urgence et au moins deux grandes villes ont un personnel à plein-temps qui s'occupe de ces questions; d'autres municipalités ont confié ces fonctions au responsable de la santé au niveau municipal.

Le travail du personnel des Services de santé d'urgence aux divers échelons du gouvernement consiste à (1) songer à des moyens de perpétuer les fonctions du gouvernement à l'occasion de l'éclatement d'une bombe nucléaire; (2) organiser les services de santé communautaires (particulièrement dans les hôpitaux, où il faudra diriger les blessés); (3) préparer des programmes d'entraînement et d'éducation en vue de la défense civile; (4) créer des stocks de médicaments, d'équipement et de fournitures pour les services de santé.

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Contamination par la radioactivité • Les personnes exposées aux radiations sont plus sensibles aux maladies. L'exposition à une grande quantité de retombée radioactive déclanchera la maladie des radiations. Pour réduire cette exposition, se préparer un abri approprié contre les retombées.

Echelons of Medical Care

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The development of the civilian emergency medical organization in Canada, the Emergency Health Services (EHS) to receive and treat large numbers of casualties has naturally been influenced by the extensive experience of the military medical services. From their experience the military medical services have refined certain techniques for reducing the apparently overwhelming task of caring for many casualties to a task of manageable proportions. These techniques can and should be used in major civilian disasters. They are:

1. The establishment of echelons of medical care.
2. The system of sorting casualties into priorities for evacuation and for treatment.
3. The standardization of treatment at each echelon of medical care.
4. The provision of early resuscitation and life-saving surgery.
5. The surgical techniques of early debridement and delayed primary suture.

Chiefly by these means it has been possible to raise the survival rate of those casualties reaching the care of the military medical services from a basic 83.3 per cent rate which occurred with the minimum medical care provided during the Crimean War¹ to the 96.4 per cent rate achieved by the United Nations med-

ical services during the Korean War,² one-hundred years later.

The major problem in the provision of emergency care has usually been the lack of suitable facilities in the forward areas. Consequently, the casualties have had to be brought back to appropriate facilities, in some instances for hundreds of miles. The medical services have had to provide sustaining care and shelter at the various halts on this journey to enable the casualties to survive, and they have taken advantage of this process of staging to institute progressive clinical care, the echelons of medical care.

With large numbers of casualties the medical services have ensured the maximum use of the treatment capabilities of every physician at each echelon or stage by a careful division of labour. Economical division of labour has been achieved by standardizing treatment and this in turn ensures that necessary procedures are carried out at the appropriate time and in the appropriate echelon.

There are four recognized echelons of medical care (Table 1):

First Echelon.—The very first need of the wounded soldiers or civilians is for first aid treatment. First aid is, by definition, not a function of the professional medical services, but it is probably the most rewarding level of care. Good first aid treatment keeps many of the casualties alive until they can be taken over by the medical services. The repeated experience in conventional warfare of having more than 20 per cent of wounded soldiers die on the battlefield must not lead one to accept this mortality rate as

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TABLE 1 Echelons of medical care in the Canadian Army and in national survival planning.

Canadian Army	Echelon of medical care	National Survival
Unit aid stations	First	Ambulance posts
↓		↓
Ambulance and clearing stations	Second	Advanced treatment centres
↓		↓
Field hospitals	Third	Expanded existing hospitals or 200-bed emergency hospitals
↓		↓
General hospitals	Fourth	Other existing hospitals

an inevitable baseline. Analysis of post mortem reports on soldiers killed in action reveals that one-quarter of these can be saved by rapid and good first aid treatment.

In civilian disaster, particularly after a nuclear attack, casualties might have to wait several hours before receiving professional medical care. Therefore the need for good first aid treatment is even greater. The numbers saved will certainly be increased if one member at least of each family has a knowledge of first aid. Such a standard is one of the principal aims of the educational program of the Emergency Health Services.

The Canadian Army is responsible for the conduct of re-entry operations into cities damaged by nuclear weapons. The Army plans to deploy a large number of Mobile Survival Columns on this task, the primary aim of which is to save lives. It should be possible for the first aiders in the columns to carry out a preliminary sorting of casualties into two basic groups, serious casualties and minor

casualties, and to load them into separate vehicles. The minor casualties could then be evacuated to by-pass the subsequent echelons and thereby reduce congestion.

Second Echelon.—At this level the casualty is given professional medical care for the first time. The primary task of the physician here is to reduce the immediate medical work-load by sorting the casualties into priorities for treatment and for evacuation so that proper medical care may be given to those who are in desperate need. Only a small proportion of the casualties require active treatment at this time in the form of resuscitation and emergency life-saving measures.

The casualty sorting techniques are fully described in the North Atlantic Treaty Organization handbook, *Emergency War Surgery*.³ The first Canadian edition of this handbook was published by the Department of National Defence in 1958 for use within the Canadian Forces Medical Service (CFMS). A second Canadian edition containing a new first

chapter relating the use of the clinical text to the Canadian survival situation is being printed by the Emergency Health Services Division of the Department of National Health and Welfare. This edition will be given a wide distribution including a free copy to every Canadian physician. Briefly, the sorting categories in a mass casualty situation are:

- Minimal
- Delayed
- Immediate
- Expectant

Professional documentation of all casualties must be started at this second echelon to secure control of the treatment. At times the transport system may become overloaded or the evacuation route may become blocked making it necessary to hold the casualties. When planning a second echelon facility this hazard must be anticipated and arrangements must be made for the provision of shelter, warmth and food.

In Canada the second echelon medical task will be assumed by the Advanced Treatment Centres (ATC's), each equipped in the first place to treat 500 serious casualties. The equipment for 600 Advanced Treatment Centres has been stockpiled by the federal Emergency Health Services and is being pre-positioned mainly around likely target cities. In non-nuclear disasters Advanced Treatment Centres must be manned by civilians, but should Canada be attacked by nuclear weapons, the Army will be committed to its survival role and many Advanced Treatment Centres may well be manned by military personnel. Detailed planning on the sharing of medical responsibility between the Canadian Forces Medical Service and the Emergency Health Services is proceeding.

Third Echelon.—This is the key echelon of life-saving surgery. On arrival the casualties are again sorted, this time by the most experienced surgeon present. He

should separate off the minor casualties for treatment at another facility, and then he should sort the serious casualties on the basis of their condition at that time into the three surgical categories: immediate, delayed or expectant.

The third echelon facility must be located as closely as possible to the second echelon facility to provide the earliest possible life-saving surgery. Around Canadian target cities all undamaged hospitals between about 25 and 50 miles from ground zero must be expected to provide third echelon medical care.

The surgical task will be immense but will certainly not be impossible. If each of the hospitals in this area were to discharge to their homes all those peacetime patients whose lives would not be jeopardized by so doing, about 85 per cent of all beds would become available for casualties. Then if each hospital were required to receive twice the number of serious casualties as it has beds set up, it is anticipated that the majority of serious casualties could be accommodated within this reasonable distance from ground zero.

The strain on these expanded existing hospitals will be reduced considerably by the provincial emergency health services plans to open up 200-bed emergency hospitals. These hospitals are designed to provide third echelon care for 200 serious casualties in any suitable building such as a school. Equipment for the first two hundred of these hospitals is now being assembled by the federal Emergency Health Services for pre-positioning in the provinces, but the staffs for these hospitals must necessarily come from health manpower resources beyond the 50-mile ring under provincial arrangements.

Agreement to standardize surgical treatment at the third echelon of care is an absolute prerequisite for the successful surgical management of mass casualties. This is understood and agreed to by the military surgeons of the NATO countries and by their civilian consultants. Their agreement in effect constitutes the clinical text of the NATO handbook,

Emergency War Surgery. Leading surgical medical authorities in Canada support the acceptance of the standards described therein.

Fourth Echelon.—This is the echelon of full definitive surgical care, the echelon of surgical repair and of rehabilitation. Patients might remain here for months or for years. Veterans from world war I are still receiving surgical care in Department of Veterans Affairs hospitals today.

Fourth echelon care in the national survival situation could be provided by the same hospitals which provided the third echelon care, but in all probability arrangements will be made after the attack to disperse many of the casualties to more distant hospitals for this care. Detailed provincial emergency health services planning for this task will not be possible before the extent of it is known.

MEDICAL TRANSPORTATION

After a nuclear strike, some of the injured will make their own way out of the target cities to treatment centres in the surrounding countryside. The majority of those rescued will be in need of organized transportation and plans must be made beforehand to provide for this need in order to save the most lives.

The rescue workers under Army control will see that casualties get to the ambulance loading points and they will load them onto whatever vehicles are available. The Mobile Survival Column commanders will then organize the evacuation of casualties back to the Advanced Treatment Centres. There is a need for transportation arrangements to be made for moving the minor cases screened out by the first aiders at the ambulance loading points directly back to selected reception centres (Emergency Clinics) to avoid clogging the Advanced Treatment Centre facilities. There is a need also for a medical transportation organization to evacuate the serious casualties from the

Advanced Treatment Centres to the third echelon hospitals.

Surveys have indicated that more than enough civilian transport is likely to be available around Canadian target cities for the needs of medical transportation. A strong case exists for the Army to assume responsibility for all medical transportation arrangements back to the third echelon hospitals on the grounds that the Army will have an organizing and controlling capability in existence at Target Headquarters at that time, and that transfer of responsibility for evacuation to another agency would cause unnecessary confusion, particularly in the handling of the direct evacuation of minor casualties. A decision has yet to be made.

MINOR CASUALTIES

The screening off of minor casualties by first aid personnel in the forward areas will considerably assist the Advanced Treatment Centres in their task of resuscitating the serious casualties. The essential decision to be made by a first aider is "can this casualty be moved 50 miles before seeing a physician?" The successful application of this concept depends upon arrangements being made to receive these minor casualties at a centre where they can be examined by a physician, re-sorted and be given minor treatment if not re-directed to third echelon hospitals. Such a centre should be called an Emergency Clinic.

The care of minor casualties would be but one of the several tasks which could be taken over by an Emergency Clinic. It should be prepared to look after all the medical needs of the community except third echelon surgery. In other words, it should be prepared to offer out-patient services as well as in-patient services to evacuees and to residents, home visiting care in the medical billeting area, and the special care needed by maternity cases, mental cases and others. Plans for staffing and equipping these Emergency Clinics are now being considered.

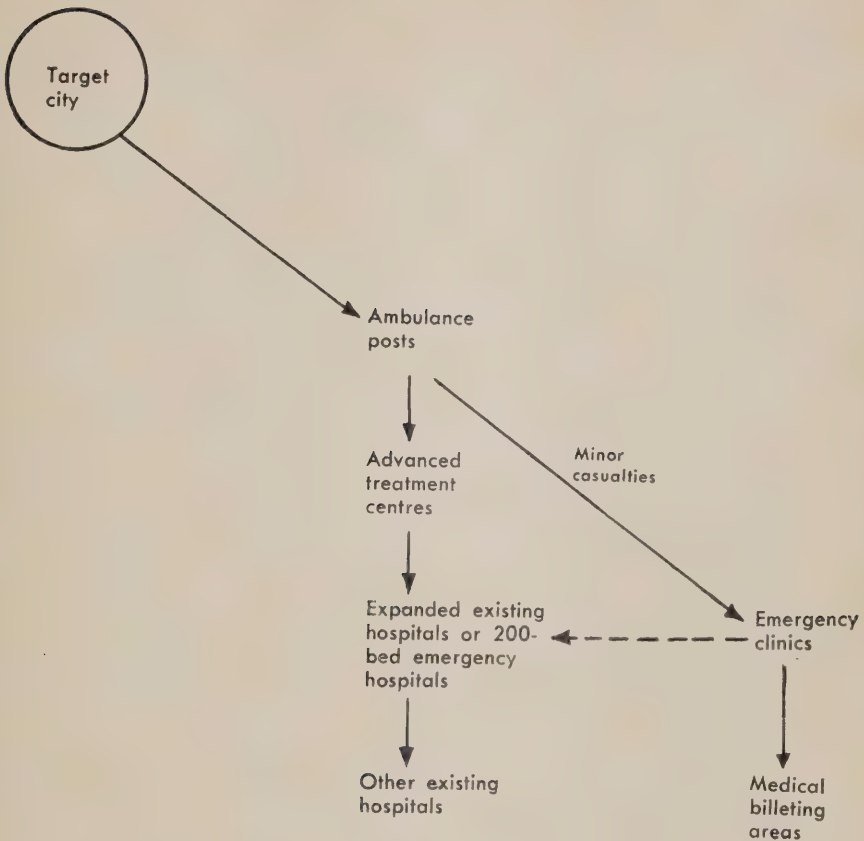


FIGURE 1 Casualty flow in national survival planning.

CONCLUSION

Should Canada be attacked by nuclear weapons its medical and hospital care resources might well be reduced to about one half by losses occurring in the target cities. The remainder will be faced with an immense task of caring for many thou-

sands of casualties. In the absence of planning, it must be expected that nearly 20 per cent of the casualties which are rescued will die from inadequate medical care and that many more will remain disabled. With planning, the mortality rate can be reduced.

In national disaster all our remaining medical and hospital resources will become part of the emergency health services. Every physician and dentist has a responsibility to prepare himself for the possibility of war and in so doing it is recommended that he consider the techniques developed so successfully by the military medical services.

RÉSUMÉ

On a situé à quatre échelons les soins médicaux des blessés par une explosion nucléaire.

Le blessé a d'abord besoin de premiers soins; cette phase des traitements ne regarde pas les services médicaux professionnels. Les blessés, après une catastrophe, surtout à la suite d'une attaque nucléaire, devraient peut-être attendre plusieurs heures avant d'être traités par des médecins. Le nombre des survivants sera plus considérable, si au moins un membre de la famille est familier avec les premiers soins. C'est l'objectif que se propose le Service de santé d'urgence par de son programme éducationnel.

L'armée canadienne a la responsabilité de se rendre la première dans les villes qui ont subi un bombardement nucléaire; l'armée se propose, dans ce travail, de déployer un grand nombre de colonnes mobiles de survie surtout dans le but de sauver des vies. Il serait d'abord possible à ces colonnes de diviser les blessés en deux catégories: les cas graves et les cas moins graves et de les monter à bord de véhicules différents.

Après l'attaque nucléaire, les colonnes de survie de l'armée canadienne organiseront l'évacuation des blessés graves vers des Centres de traitements majeurs. Les cas moins graves, classés comme tels par les soldats aux points d'embarquement dans les ambulances, seront ramenés aux cliniques d'urgence, éliminant ainsi les échelons subséquents et abaissant le flot des blessés à ces Centres.

Au second échelon, le blessé reçoit des soins de la part de médecins pour la première fois. Il s'agit ici d'alléger immé-

diatement le travail des médecins en fixant à chacun des blessés une priorité pour les traitements et pour l'évacuation de façon à ne traiter que ceux qui en ont un besoin impérieux.

Seul un petit nombre de blessés a besoin tout de suite des traitements de ressuscitation ou d'intervention pour sauver la vie. En résumé, les blessés sont classés par catégories: blessures légères, blessures qui peuvent attendre, blessures qui doivent être traitées tout de suite, blessures qu'il faudra traiter.

Le second échelon des soins médicaux sera assuré au Canada par les Centres de traitements majeurs, dont chacun est équipé pour traiter d'abord 500 grands blessés. On a établi des réserves pour 600 de ces Centres de traitements majeurs qui seront situés près des villes qui sont des cibles probables.

Le troisième échelon consiste en chirurgie majeure destinée à sauver des vies; ce troisième échelon, pour fonctionner avec succès, doit être situé près des installations qui constituent le deuxième échelon. Les hôpitaux qui seront intacts dans un rayon oscillant entre 25 et 50 milles des villes susceptibles d'être attaquées, abriteront le troisième échelon des traitements médicaux. On diminuera le nombre des blessés dirigés vers les hôpitaux en établissant des hôpitaux d'urgence capables de recevoir 200 grands blessés dans des édifices convenables, tels des écoles. On est à amasser l'équipement nécessaire pour deux cents de ces hôpitaux pour l'offrir aux provinces.

Le quatrième échelon se constitue de chirurgie définitive et restaurative et de réhabilitation.

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Department of National
Health and Welfare

Protection of Your Family

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Every day, each Canadian family takes simple steps to ensure its continued peacetime survival as a family. The purchase of food, medicines, clothing, insurance, is a clear example of acceptance of such responsibilities. How much more is needed to provide your family with the best chance of survival in a nuclear attack?

About half the hours of each day, all members of the family are together in their home. If warning comes at this time, plans can rapidly be devised, but necessary supplies may not be available. If warning comes with the husband at work and the children at school, no plans can possibly be improvised and the family is open to destruction. Family survival planning is vital.

Other papers in this symposium describe the facts people need to know about the dangers of nuclear attack. This paper attempts to provide a reasonable program for the protection of your family. The steps of the program are outlined by headings. Under each heading is an interpretation of the action you should take now for the sake of your family.

1. Know the Effects of Nuclear Explosions.—It has been announced that a potential enemy recently detonated for test purposes a nuclear weapon equivalent to 9 million tons of T.N.T. Learn what this means in terms of destructive energy dropped during a nuclear attack. The Emergency Health Services manual, prepared by the Special Weapons Section on *Nuclear Weapons*, is available for you to study. Write to your provincial

emergency health services director for it today.

2. Know the Facts about Radioactive Fallout.—Radioactive fallout is a menace to the health of your family. Protective measures can and should be taken against this menace.

(a) The best protection is provided by building a shelter within your home. A fallout shelter can make the difference between severe illness or death and no clinical manifestation of even mild radiation sickness. Several booklets are available to guide you in constructing your family shelter. These are: (1) *Simpler Shelters*, (2) *Basement Fallout Shelter*, (3) *Your Basement Fallout Shelter*, and (4) *Blast Shelters*.

(b) Personal contamination with radioactive dust is undesirable and can give rise to skin injury but does not cause serious radiation sickness or death. Early personal decontamination should be practised. You should acquaint yourself with the simple procedures for this which are recommended in the *Nuclear Weapons* manual.

3. Know the Warning Signals and Have a Battery-powered Radio.—

(a) There are three types of warning: the Alert, Take Cover, and the All Clear. Members of your family should know the message being given to them by the warning sirens. If they do not know them already, turn to page 16 of your Emergency Measures Organization manual *11 Steps to Survival*.

(b) As head of the house, you should procure a battery-powered radio for use

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if electricity fails. This could be your only contact with the community outside, the people responsible for advising you during your shelter life.

4. *Have Fourteen Days' Emergency Supplies.*—Space in a shelter should be restricted to those essential items which will guarantee first aid, warmth, food, safe water, sanitation, rest, communication and recreation for the occupants. *Your Emergency Pack* prepared by Emergency Welfare Services provides lists of essential items you need. Lists are also to be found on pages 23, 24 and 25 of *11 Steps to Survival*. *Family Health Planning for Disaster* prepared by Emergency Health Services is an excellent reference for the family.

5. *Start Training Now.*—The St. John Ambulance is the agency which teaches the fundamentals of first aid in disaster. Both the St. John Ambulance and Red Cross teach home nursing. See that at least one person in your family is so trained. Also that an adequate first aid kit is always available. In a disaster situation, medical assistance will be in short supply. Your family must be trained to be self-reliant.

As a member of the health professions, you will be required to assist physicians in their great task of casualty care. First aid, minor treatment, resuscitation and anaesthesia are tasks which you should be prepared to accept in the casualty care program. Granted, your first duty is to your family. Once they are safely established, however, you are expected to report to the nearest health assembly point on the periphery of your community.

A list of first aid supplies recommended by Emergency Health Services is listed in Table 1. Check your family first aid needs for emergency and ask your pharmacist for advice. These are recom-

mended quantities for a family of four. Provide three months supply of any special medicines for members of the family who require continuous treatment.

6. *Know Your Community Plan.*—Every municipality must have an emergency plan to meet disaster. Every resident in the municipality should know what the plan is. As a father, you should be certain, for instance, that the local plan includes a school plan. As a health worker, you should know the plan of your local hospital, as well as that of your place of employment.

You will help make better plans for your family and your co-workers if you know the basic disaster plan for your community. Furthermore two booklets, designed to assist the city dweller, are recommended to help you to fulfill your obligations. They are: *Survival in Likely Target Areas* and *Welfare Tips for Survival*.

7. *Know Where You and Your Family are Going.*—In those sixteen urban areas that are potential targets, emergency measures officials and municipal police are preparing traffic control plans to permit the voluntary evacuation of the city. Evacuation routes are radial to the centre and the plan will not permit cross traffic. Consequently, on the alert warning, members of the family who happen to be located in sections of the city other than that in which the home is located will probably be unable to reach their home in time. If a city traffic plan is not in effect, it is highly likely that chaotic traffic conditions would also preclude the gathering together of the family in time. Every member must know what action he or she is to take as an individual and a location where the family can reunite after the attack. In short—know where you and your family are going!

TABLE 1 List of recommended first aid supplies for a family of four.

Item	Quantity	Check
Sterile dressing pads (8 in. x 8 in.)	4 pads	
Sterile gauze pads (3 in. x 3 in.)	12 pads	
Triangular bandages	6 bandages	
Gauze bandages (2 in. x 10 yards)	3 rolls	
Sterile absorbent cotton (1 oz.)	1 box	
Individual adhesive dressing strips ($\frac{3}{4}$ in. x 3 in.)	12 strips	
Adhesive tape	1 roll	
Safety pins (1 $\frac{1}{2}$ in.)	12 pins	
Splints, plastic or wood (3 $\frac{1}{3}$ in. x 15 in.)	6 splints	
Small scissors	1 pair	
Wooden tongue blades	12 blades	
Folding paper drinking cups	25 cups	
Toilet soap	1 bar	
Paper tissues	1 package	
Acetylsalicylic acid, 5 grain tablet	12 tablets	
Sodium chloride, 10 grain tablet	25 tablets	
Sodium bicarbonate, 5 grain tablet	25 tablets	
Water purification tablets	100 tablets	
Antiseptic solution (Benzalkonium chloride 1:1,000)	3 ounces	
Eye drops: castor oil	1 ounce	

CONCLUSION

If the time to act comes, you must, in fairness to your family, yourself and your country, have a plan of action. The time to plan is now. The family that plans together, stands together. The decision is yours!

RÉSUMÉ

Les conditions de survie de votre famille en cas d'explosion nucléaire sont les suivantes:

1. *Connaître les effets des explosions nucléaires.*
2. *Connaître les conséquences des re-*

tombées radioactives; avoir un endroit où se réfugier et éviter la contamination avec la poussière radioactive.

3. Connaître les signaux d'alarme et avoir une radio à piles sèches.

4. Avoir des réserves alimentaires et autres pour deux semaines.

5. Apprendre les rudiments des premiers soins. Vous serez requis, comme membre d'une profession de santé, d'aider les médecins pour le traitement des blessés. Vous devriez être prêts, dans un cas d'urgence nationale, à assumer la tâche des premiers soins, des traitements mineurs, de la ressuscitation et de l'anesthésie.

6. Connaître le programme d'urgence de votre localité.

7. Savoir où vous devez vous rendre avec les membres de votre famille, si vous vivez dans un des seize endroits qui sont des cibles probables. La police municipale et les préposés aux mesures d'urgence sont à élaborer des projets pour diriger la circulation en vue de l'évacuation volontaire de ces villes. Les voies d'évacuation rayonnent du centre de chaque ville et ne permettent pas de croisement. Par con-

séquent, les membres de votre famille, s'ils se trouvent, au moment de l'alerte, dans un secteur de la ville éloigné de la maison, ne pourront pas y retourner en temps; chacun d'eux doit savoir la décision à prendre et se diriger à un endroit où la famille pourra se réunir après l'attaque.

REFERENCES

The following publications may be obtained free of charge by writing to EMO, P.O. Box 10,000 in the capital city of your province:

1. 11 steps to survival (*Onze étapes pour la survivance*).
2. Your basement fallout shelter [for existing homes] (*Abri dans le sous-sol contre les retombées radioactives*).
3. Basement fallout shelters [for new homes] (*Abri dans le sous-sol contre les retombées radioactives [nouvelles maisons]*).
4. Simpler shelters.
5. Blast shelters.
6. Survival in likely target areas.

The following publications may be procured by writing to your provincial civil defence co-ordinator or the provincial emergency health services director:

1. Nuclear weapons.
2. Family health planning for disaster (*Protection de la famille en cas de désastre*).

The following publications may be obtained by writing to your local provincial civil defence or emergency measures organization officials:

1. Welfare tips for survival (*Comment survivre*).
2. Your emergency pack (*Nécessaire de survivance*).

Department of National
Health and Welfare

Emergency Disinfection of Water • Select the source of clearest water you can find, known to be free from radioactive fallout (fallout cannot be removed from water by boiling or chlorination). Boil for ten minutes. Alternatively, treat the water with any household bleaching solution containing hypochlorite such as concentrated javel water, or household iodine or water purification tablets.

Désinfection de l'eau en cas d'urgence • On choisit la source d'eau la plus limpide que l'on puisse trouver et que l'on sait exempte de retombée radioactive (on ne peut purifier l'eau des retombées radioactives ni en la faisant bouillir ni en ajoutant du chlore). Ensuite la faire bouillir durant dix minutes ou procéder à la chloration d'urgence. On peut traiter l'eau par n'importe quelle solution de blanchiment domestique qui renferme un hypochlorite, comme l'eau de javelle concentrée, ou par une solution d'iode domestique ou, encore par des comprimés pour assainir l'eau.

EDITORIALS

You, Your Family and Community in Nuclear Disaster

Doctor, in the event of nuclear attack or other disaster, would you know exactly what to do? Could you do some things that might make it possible for you and your family and as many as possible of your community to survive?

In every stricken community the majority of the people would turn in fear, desperation and suffering to those of its members who are known to have special knowledge and skills in the relief of pain, the care of injuries and the saving of lives.

Many physicians, nurses, dentists, veterinarians and pharmacists would not survive the first onslaught. The surviving members of all the health professions would be sought out with demands for help and advice. The better prepared they are to meet such a catastrophe in a pre-planned way, the more effective they can be in relieving pain and saving lives by taking over or sharing some of the urgent emergency responsibilities of other health trained people.

The basic science background of the dentist makes the acquisition of the necessary emergency techniques a fairly easy matter. Their systematic utilization under disaster conditions requires planned co-ordination with those of the other health professions, and with the necessary supply and administrative agencies.

The federal and the provincial governments have created emergency training, supply, and administrative organizations. The operation of these is now regarded as a normal government function. Many municipalities have adapted to the pattern and made the necessary arrangements to collaborate.

This active precautionary planning by governments, at all levels, reflects public concern. The degree to which it can be a factor in saving people in a disaster situation will depend upon how fully the members of all the health professions prepare to co-operate with one another, and to utilize the training, co-ordinating, and supply agencies which have been created by governments to make mass casualty care as fully effective as disaster circumstances will permit.

This symposium on emergency health measures is presented in the hope that every dentist in Canada may be inspired to set an example of preparedness and co-operation. His life and the lives of his family, as well as those of many members of his community, may depend on how well he prepares himself, and how well he works with and influences those around him.

In the planning stage a responsibility rests not only upon each member of every health profession; it extends to all

the professional organizations of each of those professions and to the schools in which they are trained.

So massive would be the casualties

from a major nuclear attack that, to borrow and adapt a phrase from Churchill,—“never will so few be called upon to do so much for so many!”

H. K. B.

Votre sort, celui de votre famille et celui de vos concitoyens au cours d'une explosion nucléaire

Docteur, sauriez-vous quoi faire si votre ville subissait une attaque nucléaire ou tout autre cataclysme? Pourriez-vous accomplir quelque chose qui vous permettrait, vous, votre famille et vos voisins de survivre en plus grand nombre possible?

La plupart des gens qui habitent une ville qui serait l'objet de bombardements nucléaires, affolés, désespérés et blessés, auraient recours à ceux qui, grâce à leurs connaissances et leur entraînement, pourraient soulager leur douleur, prendre soin de leurs blessures et sauver des vies.

Plusieurs médecins, plusieurs garde-malades, plusieurs dentistes, plusieurs vétérinaires et plusieurs pharmaciens seraient frappés aux premières vagues de l'attaque. Les survivants parmi les thérapeutes seraient assiégés de demandes de services et de conseils. Ils pourraient davantage, conjointement avec d'autres personnes entraînées comme eux aux services sanitaires, soulager des blessés et sauver des vies, s'ils étaient préparés à faire face à des circonstances tragiques.

La formation scientifique du dentiste lui facilite l'acquisition des connaissances nécessaires à prodiguer des services d'urgence. Il pourrait, à l'occasion d'une catastrophe et avec les stocks accumulés à l'avance, utiliser avec grand profit les

techniques d'urgence, à condition d'agir selon un plan tracé à l'avance pour toutes les professions sanitaires et de recevoir des directives des organismes chargés de planifier le travail.

Le gouvernement fédéral et celui des provinces ont créé des organismes chargés d'entraîner le personnel, d'accumuler des stocks et d'en diriger l'administration. Ces préparatifs sont maintenant considérés par le gouvernement comme des fonctions de routine. Plusieurs municipalités ont adopté cette façon de faire et elles collaborent effectivement avec les autorités du pays.

Le gouvernement, en se préparant à cette éventualité, n'a en vue que le bien de la population. Un tel plan sera efficace pour sauver des vies au cours d'un cataclysme en autant que les membres de toutes les professions sanitaires seront prêts à collaborer les uns avec les autres et en autant qu'ils utiliseront les disponibilités d'entraînement, de coordination et de matériel que le gouvernement met à leur disposition. C'est à cette seule condition que les prévisions des autorités se réaliseront, selon les circonstances, pour apporter d'une façon efficace les secours nécessaires aux victimes d'une catastrophe.

On présente ce symposium sur les mesures de santé d'urgence aux dentistes pour les porter à donner un exemple de coopération et de vigilance. Leur propre vie, celle des membres de leur famille et de plusieurs de leurs concitoyens dépendra peut-être de leur préparation à cette éventualité et de leur collaboration et de l'influence qu'ils exerceront sur ceux qui se dévouent avec eux.

Cette responsabilité n'incombe pas seulement aux membres des professions sanitaires; les organismes professionnels de chacun de ces groupes et les écoles où ils sont formés, surtout au stage d'organisation, ont aussi un rôle important à jouer.

H. K. B.

BUREAUX, COMMITTEES AND COUNCILS

Federal Income Tax Returns by Members of the Dental Profession

Secretariat, Canadian Dental Association

For guidance to the dental profession and to bring about a greater uniformity in the data to be furnished to the Taxation Division of the Department of National Revenue in the annual Income Tax Returns to be filed, the following matters are set out.

INCOME

There should be maintained by every member of the dental profession an accurate record of income received, both as fees from his profession and by way of investment income. The record should be clear and capable of being readily checked against the return filed. Records should be maintained in books kept for the purpose which should be retained until written permission for their

disposal is obtained from the Minister of National Revenue.

EXPENSES

Under the heading of expenses the following accounts should be maintained and records kept available for checking purposes in support of charges made:

- (a) Dental and like supplies.
- (b) Office help, nurse, bookkeeper, laundry and malpractice insurance premiums:

Amounts of salaries and wages paid should be reported on Form T4, obtainable from your District Income

Tax Office. (The Income Tax Act does not allow as a deduction a salary paid by a husband to a wife or vice versa. Such amount, if paid, is to be added back to income of the payer.)

- (c) Telephone expenses incurred in connection with professional practice.
- (d) Assistant's fees:

The names and addresses of the assistants to whom fees are paid, and amounts paid, should be furnished on or before the last day of February in each year on Form T4. (Do not confuse with individual return of income, Form T1, to be filed on or before April 30 in each year.)

- (e) Rentals paid:

The name and address of the owner (preferably) or agent of the rented premises should be furnished. [See (g).]

- (f) Postage and stationery.
- (g) Proportional expenses of dentists practising from their residences:

- (a) Owned by the dentist:

Where a dentist practises from a house he owns and as well resides in, a proportionate allowance of house expenses will be given for the laboratory, office and waiting room space, on the basis that this space bears to the total space of the residence. The charges cover taxes, light, heat, insurance, repairs, and interest on mortgage. (Name and address of mortgagee to be stated.) Note: For depreciation see item 2 (m).

- (b) Rented by the dentist:

The rent will be apportioned and heat and light if paid by the dentist; the owner of the premises takes care of all other expenses mentioned in (a) above.

- (h) Sundry expenses (not otherwise classified):

The expenses charged to this account should be capable of analysis and supported by records.

Claims for charitable donations will be allowed up to 10 per cent of net income from all sources upon sub-

mission of receipts to your District Income Tax Office. Charitable donations made through professional practice should be excluded from professional expenses and claimed as a deduction from income generally, along with any donations made otherwise.

The annual dues paid to governing bodies under which authority to practise is issued and membership association fees, to be recorded on the return, will be admitted as a charge.

The cost of attending postgraduate courses will not be allowed.

- (i) Interest paid on borrowed money may be charged against professional income if the borrowing was for professional purposes. If the money was borrowed to acquire investments, the interest is chargeable against the investment income. If the loan was for personal purposes no deduction from income will be allowed for the interest paid thereon.
- (j) Business tax should be allowed as an expense but income taxes will not be allowed.

- (k) Automobile expenses:

Taxi fares and automobile expenses incurred in earning the income from the dental practice will be allowed when the dentist must visit the patients at their homes. The cost of transportation between the dentist's home and his office, however, is not an allowable deduction from income.

- (l) Social club dues are allowable as deductions from income only when, and to the extent that, they are paid for business purposes, and any dentist claiming them may be required to prove, to the satisfaction of the taxation authorities that the amount claimed was expended wholly and directly for the purpose of increasing his business income. "Social club dues" means annual or monthly membership dues or fees; it does not include an initiation or entrance fee or the cost of a share of a club's capital stock, nor does it include charges for food and drink, living accommodation, fees for the introduction of guests and the like.

- (m) Capital Cost Allowance (Depreciation):

The method of computing capital

cost allowance for tax purposes is the same as that used last year and you should have no difficulty if you have a copy of last year's return available.

A description of the treatment of capital cost allowance may be found on page four of the Income Tax Return form T1 General under the Part XI Method and in the T1 General Information Sheet.

Simply carry forward the balance remaining in each class after deducting last year's allowance. Add to this figure the cost of any new equipment purchased and deduct the proceeds from any disposal of property in each class. The rate you wish to use, not exceeding the maximum rate (see tables), is applied to this new balance for each class to obtain the capital cost allowance you may claim this year.

The schedule on page four of the Income Tax Return is reproduced at the foot of this page.

The maximum rates for the classes of equipment most used by dentists appear in Table 1.

Instruments costing less than \$100 each belong in class 12 and have a maximum allowance rate of 100 per cent. They should not be included in expenses but should be recorded as additions in column 3 of the schedule.

TABLE 1

Assets	Class	Maximum rate
Dental equipment including instruments each costing \$100 or more	8	20%
Instruments costing less than \$100	12	100%
Office furniture and fixtures	8	20%
Frame building (office or residence used both as dwelling and office)	6	10%
Brick building (office or residence used both as dwelling and office)	3	5%

Where a dentist practises from a house which he owns and resides in, the allowance may be claimed as above on a portion of the cost of the residence, excluding land. For example if the residence were a brick building costing \$12,000 and one-third of the space were used for the office, the dentist would use \$4,000 as the business portion of the cost and apply the building rate of 5 per cent to determine the maximum depreciation allowable in the first year.

For further information on the subject you may refer to the Regulations or you may consult your District Income Tax Office.

CONVENTION EXPENSES

Convention expenses are allowable to an individual practising a profession, but the allowance is restricted to the expense of

SCHEDULE

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Class number	Undepreciated capital cost at beginning of 1962 (Col. 8 of 1961 return)	Cost of additions during 1962	Proceeds from disposals during 1962	Undepreciated capital cost before 1962 allowance (Col. 2 plus 3, less 4)	Rate %	Capital cost allowance for 1962	Undepreciated capital cost at end of 1962 (Col. 5 less Col. 7)

attending no more than two conventions in a taxation year. The taxpayer's attendance at the convention must have been for professional reasons. There are no geographical restrictions and the convention, therefore, need not necessarily have been held in Canada. The expenses to be allowed must be reasonable and the taxpayer should show:

1. The dates on or between which the convention was held, and the location thereof:
2. The number of days he was present at the convention, supported by a certificate of attendance from the sponsoring organization; and
3. The expenses incurred, segregating
 - (a) Transportation expenses
 - (b) Meals, and
 - (c) Hotel expenses, for which at least vouchers should be obtained and kept available for inspection.

All expenses of a personal nature including those attributable to the fact that the taxpayer's wife (or husband) accompanied him to the convention must be excluded from the foregoing.

No expenses for attending a convention are allowable as a deduction from salary income, since such a deduction is prohibited by Section 5 of the Act.

REGISTERED RETIREMENT SAVINGS PLANS

The amount that is deductible in respect of contributions to a retirement savings plan is limited:

- (a) In the case of an employee receiving a salary who is covered by a registered pension fund or plan (whether or not he contributes to the pension fund) to \$1,500 or 10 per cent of his earned income, minus the amount, if any, he is allowed to deduct from income for his contribution to the pension fund.
- (b) In other cases, to the lesser of \$2,500 or 10 per cent of his earned income. "Earned income" usually consists of income received as salary (before any pension deductions) or income from carrying on a business or profession, plus net rental income.

The amounts deductible are those paid in 1962 and within 60 days after the end of the year. A payment made in January or February 1962 cannot be claimed in 1962 if it could have been deducted in 1961.

Individuals enquiring whether a proposed or existing plan is acceptable should usually obtain that information from the corporation offering the plan as it will normally be the corporation's responsibility to explain the plan and get it registered.

Dentists who have applied for membership in the Canadian Dental Association Retirement Savings Plan prior to February 15, 1963, may be assured that their names are registered as participants in a registered retirement savings plan and that their contributions are deductible for the taxation year 1962. The closing date for applications and contributions applicable to 1962 is February 15, 1963.

A personal statement of account and a receipt showing the amount of contributions will be mailed in March 1963 to each participant to support claims made for deductions in 1961 income tax returns.

Applications for membership in CDARSP received after February 15, 1963, will entitle participants to tax deferment for 1963.

PAYMENT OF TAX

Individuals whose income is more than 25 per cent derived from sources other than salary or wages are required to pay the tax for each year by quarterly instalments during such year on the following dates, March 31, June 30, September 20 and December 31.

DENTISTS UNDER SALARY CONTRACT

The Income Tax Act provides for the deduction of certain expenses from salary income.

The allowable expenses include travelling expenses, annual professional membership dues, office rent, salary to an assistant or substitute and supplies consumed directly in the performance of the duties of employment.

Certain conditions are attached to the allowance of the expenses. Without trying to recite the exact provisions of the law the main points are:

- (a) That the expenses must have been incurred in the performance of the duties of the office for employment.
- (b) That the employee is required under the contract of employment to pay the expenses.
- (c) To claim travelling expenses the employee must be ordinarily required to carry on the duties of his employment

away from his employer's place of business. Travelling between the dentist's home and his office is not included.

INCOME FROM A PARTNERSHIP

Additional expenses incurred by a partner, but not charged to the partnership, may be claimed as a deduction from the partner's share of income. However, the partner must be in a position to substantiate these expenses, to show why they were not charged

to the partnership and that they were necessarily laid out to earn partnership income.

PROVINCIAL TAXES ON INDIVIDUALS

For the 1962 and following taxation years, each of the ten provinces imposes its own tax on the income earned by an individual in that province. With the exception of the province of Quebec, no separate provincial income tax return need be filed by an individual whose income is subject to provincial tax.

Nombre des dentistes au Canada en 1962

Bureau des recherches économiques de l'A.D.C.

La population du Canada, au cours des dernières dix années, a doublé deux fois plus rapidement que le nombre des dentistes. Il y a maintenant 3,108 personnes pour chacun des dentistes. L'année dernière, la proportion des dentistes par rapport à la population s'établissait à 1 pour 3,037.

Il y avait 5,868 dentistes enregistrés au Canada au début de l'année. Quarante-vingt-seize étaient des femmes.

La Colombie britannique a la meilleure proportion (1 pour 2,406), tandis que Terre-Neuve a la plus mauvaise (1 pour 10,658). Pour la deuxième année consécutive, l'exode des dentistes vers le Mani-

TABLEAU 1 Dentistes enregistrés au Canada en 1962.

Province	Hommes	Femmes	Total
Terre-Neuve	41	2	43
Ile-du-Prince-Edouard	29	0	29
Nouvelle-Ecosse	187	3	190
Nouveau-Brunswick	123	1	124
Québec	1,403	14	1,417
Ontario	2,428	56	2,484
Manitoba	282	1	283
Saskatchewan	191	2	193
Alberta	428	6	434
Colombie britannique	660	11	671
Canada	5,772	96	5,868

TABLEAU 2 Modifications dans les registres en 1961.

Province	Retraits des registres			Additions aux registres
	Décès	Retraites	Déménagements	
Terre-Neuve	0	0	1	3
Ile-du-Prince-Edouard	0	0	1	0
Nouvelle-Ecosse	3	3	6	6
Nouveau-Brunswick	0	3	0	6
Québec	7	21	13	49
Ontario	16	24	6	86
Manitoba	8	3	5	15
Saskatchewan	2	2	1	6
Alberta	6	4	5	29
Colombie britannique	4	3	8	25
Canada	46	63	46	225

TABLEAU 3 Migration des dentistes canadiens durant 1961.

A													
De	T.-N.	I.-P.-E.	N.-E.	N.-B.	P.Qué.	Ont.	Man.	Sask.	Alta.	C.-B.	E.-U.	Ailleurs	Total
T.-N.						1							1
I.-P.-E.			1										1
N.-E.				1		2	1		2				6
N.-B.													0
P.Qué.			1			4	4		1		1	2	13
Ont.								1			3	2	6
Man.								1	2		2		5
Sask.										1			1
Alta.						1	2			2			5
C.-B.					1		2				3	2	8
TOTAL	0	0	2	1	1	8	9	2	5	3	9	6	46

toba a été la plus considérable de toutes les provinces. Le nombre des dentistes employés à temps complet dans des services de santé se chiffre à 248. Il y a 83 hygiénistes dentaires en exercice.

TABLEAU 4 Population par dentiste et dentistes par 10,000 de population en 1962.

Province	Population par dentiste	Dentistes par 10,000 de population
Terre-Neuve	10,648	.9
Ile-du-Prince-Edouard	3,608	2.8
Nouvelle-Ecosse	3,879	2.6
Nouveau-Brunswick	4,822	2.1
Québec	3,712	2.7
Ontario	2,511	4.0
Manitoba	3,257	3.1
Saskatchewan	4,794	2.1
Alberta	3,069	3.2
Colombie britannique	2,406	4.1
Canada	3,108	3.2

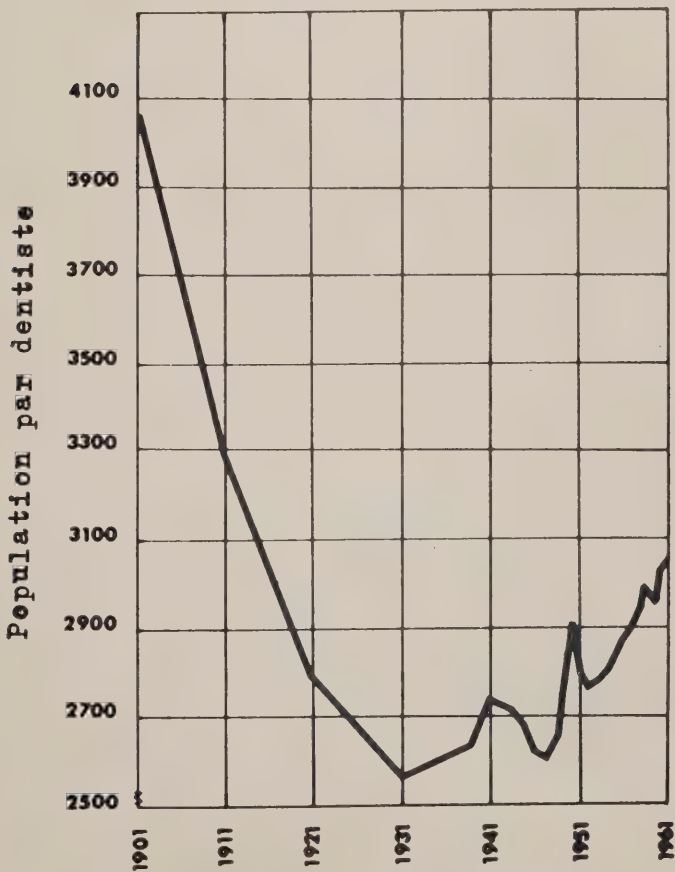


FIGURE 1 Population par dentiste au Canada, 1901-1961.

TABLEAU 5 Augmentation net des dentistes et pourcentage de l'augmentation des dentistes et de la population, par province, 1938-1962 et 1952-1962.

Province	Augmentation depuis 1938			Augmentation depuis 1952		
	Dentistes		Population Pourcentage	Dentistes		Population Pourcentage
	Nombre	Pourcentage		Nombre	Pourcentage	
T.-N.	24	126.3	NA	22	104.8	26.7
I.-P.-E.	-1	-3.3	12.5	0	0.0	6.3
N.-E.	21	12.4	34.2	-6	-3.1	14.7
N.-B.	14	12.7	36.8	14	12.7	15.9
Qué.	543	62.1	67.4	209	17.3	29.7
Ont.	552	28.6	71.5	330	15.3	35.6
Man.	32	12.7	28.9	22	8.4	18.7
Sask.	-17	-8.1	.3	-25	-11.5	11.2
Alta	198	83.9	71.6	106	32.3	41.8
C.-B.	309	85.3	114.6	125	22.9	39.8
Canada	1,675	39.9	65.1	797	15.7	30.2

TABLEAU 6 Nombre des spécialistes, 1962.

Spécialités	Nombre de spécialistes										Total
	T.-N.	I.-P.-E.	N.-E.	N.-B.	P. Qué.	Ont.	Man.	Sask.	Alta	C.-B.	
Orthodontie	0	0	4	2	26	67	5	2	10	11	127
Chirurgie buccale	0	0	2	0	8	34	4	0	4	7	59
Périodontie	0	0	1	0	4	16	1	0	0	2	24
Pédodontie	0	0	1	0	0	6	1	0	2	7	17
Total	0	0	8	2	38	123	11	2	16	27	227

TABLEAU 7 Nombre des hygiénistes dentaires, 1962.

Province	En exercice
Terre-Neuve	0
Ile-du-Prince-Edouard	0
Nouvelle-Ecosse	5
Nouveau-Brunswick	0
Québec	0
Ontario	58
Manitoba	1
Saskatchewan	7
Alberta	4
Colombie britannique	8
Canada	83

TABLEAU 8 Dentistes employés à temps complet dans des services de santé.

	T.-N.	I.-P.-E.	N.-E.	N.-B.	P. Qué.	Ont.	Man.	Sask.	Alta.	C.-B.	Total
Facultés dentaires											
temps complet	0	0	5	0	17	15	9	0	11	0	57
demi-temps	0	0	0	0	8	5	3	0	39	0	55
Service hospitalier											
temps complet	0	0	3	2	6	24	1	2	7	10	55
demi-temps	0	0	0	0	40	5	0	0	0	14	59
Service scolaire											
temps complet	0	0	1	3	15	32	4	0	5	4	64
demi-temps	0	0	2	1	5	59	0	1	3	1	72
Service d'hygiène publique											
temps complet	2	2	2	2	12	9	4	1	7	31	72
demi-temps	0	0	0	0	0	0	1	0	1	0	2
Total											
Temps complet	2	2	11	7	50	80	18	3	30	45	248
Demi-temps	0	0	2	1	53	69	4	1	43	15	188

TABLEAU 9 Dentistes employés à plein-temps par les Ministères fédéraux, 1962.

Défense nationale	164
Santé nationale et bien-être social	23
Anciens combattants	36
Total	223

Aliments sains • Les aliments sains sont indispensables à la survivance. Au cours des cinq premiers jours, chacun aura besoin d'au moins un repas par jour. Au cours des vingt-cinq jours suivants, il faudra à chaque personne au moins deux repas par jour. Les sources d'aliments sains comprennent le réfrigérateur familial (il faut utiliser les premiers aliments qui s'y trouvent pour éviter de les perdre si l'énergie électrique venait à manquer), les réserves de la famille (garder un approvisionnement pour au moins 14 jours), les centres d'alimentation collective, et les rations fournies par les autorités municipales. Toutes les autres sources d'aliments sont dangereuses. Des autres précautions comprennent la propreté personnelle de ceux qui s'occupent des aliments et la propreté dans la préparation des aliments et propreté des utensiles. Toutes les viandes doivent être bien cuites. N'employer que de l'eau reconnue potable pour apprêter les aliments. Ne pas oublier que les restes d'aliments se gâtent très vite. Se débarrasser des déchets et des ordures de façon sanitaire. Protéger les aliments contre les mouches et les rongeurs.

DENTISTRY IN THE NEWS

The Association

PRESIDENT AND SECRETARY TOUR EASTERN CANADA

Canadian Dental Association president M. V. J. Keenan and secretary Don W. Gullett visited five eastern Canadian centres in mid-November. Dental society meetings were addressed at Saint John, New Brunswick — November 12; Charlottetown, Prince Edward Island — November 13; Halifax, Nova Scotia — November 14; Quebec City — November 15; and Montreal — November 19.

The president and secretary visited Newfoundland earlier last month to attend the annual convention of the Newfoundland Dental Society.

FUND FOR DENTAL EDUCATION LAUNCHED IN CANADA

The Board of Governors of the Canadian Dental Association, at its annual meeting in June of this year, approved in principle the initiation of a Canadian fund for dental education. Establishment of this fund is now a reality following official approval of its trust deed.

The chairman of the fund is J. D. McLean, dean of the Faculty of Dentistry at Dalhousie University in Halifax. Trustees of the fund, representing geographic areas of Canada, are L. Lepine of Montreal, H. W. Reid of Toronto and W. P. Munsie of Vancouver. Representing the dental supply industry on the board of trustees is Mr. M. E. Bower, president of the Dental Company of Canada. These appointments were recently confirmed by the Executive Council of the Canadian Dental Association.

The trustees held their first meeting in Toronto on November 30. Fund-raising methods were decided upon at this meeting.

Named as vice-chairman of the fund was M. E. Bower. K. L. Croft was appointed secretary to the board of trustees. The dental supply industry has already given \$10,000. The Canadian Dental Association has donated \$5,000 plus initial legal and meeting expenses. The fund is to be operated under a trust deed administered by the Canadian Dental Association. Policies concerning fund raising and grants are the responsibility of the trustees.

According to the purposes approved by the Board of Governors, the Canadian Fund for Dental Education is to "receive moneys or negotiable securities in any form for the purpose of aiding and assisting dental education, directly or indirectly, through projects designed to improve dental health by means of teaching and research in co-operation with dental schools and the students thereof." The trustees will draft specific regulations governing grants.

J. P. WHYTE APPOINTED TO DOMINION COUNCIL OF HEALTH

A past president of the Canadian Dental Association, J. P. Whyte of Swift Current, Saskatchewan, has been appointed to the Dominion Council of Health according to a recent announcement from the Department of National Health and Welfare, Ottawa.

The council is the principal advisory body to the Minister of National Health and Welfare on matters relating to the health of Canadians.

Dr. Whyte was born in Pembroke, Ontario. He was educated at Eganville and Renfrew, Ontario, and at the University of Toronto. He served overseas during the Second World War and was Deputy Director of Dental Services at Canadian military headquarters in London at the end of the war. A member of the Board of Governors of the Canadian Dental Association for several years, Dr. Whyte was Association president during 1960-61.

Canada and the Provinces

ALBERTA

Central Alberta Dental Society.—Recent guests at a meeting of the Central Alberta Dental Society were J. E. Young, president, and G. E. Decker, secretary of the Alberta Dental Association. Describing the dental auxiliary program in Alberta, Dr. Young stated that "the training of dental auxiliaries parallels that of the dental hygienist, and may be expanded to allow dental auxiliaries to carry out additional intra-oral procedures."

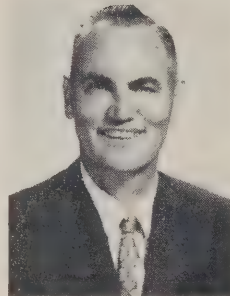
The first class of dental auxiliaries will graduate from the University of Alberta in May 1963. These graduates will be employed by health units in the province. Existing legislation stipulates that dental auxiliaries can be employed only by health units, Dr. Young said, adding his belief that health unit requirements might be satisfied by 1964 and that dental auxiliaries might thereafter become available for private practices.

"It will be our responsibility to make full use of the services which the auxiliary is trained to carry out. The advantages of doing so are many, the disadvantages are few," he continued. Directing his remarks to dentists who question the usefulness of a dental auxiliary, Dr. Young explained that he employs a dental auxiliary in his own office for three half-days a week. On each of these half-days, the auxiliary performs four treatment procedures, be they prophylaxis, topical stannous fluoride application, or a combination of both. In one week Dr. Young delegates to the dental auxiliary twelve treatment procedures. This permits him to devote more time to other more demanding and often more remunerative tasks. Even if her productivity were merely equivalent to the cost of her employment, the presence of the dental auxiliary would still be amply justified by virtue of the workload which can be delegated to her, Dr. Young concluded.

Referring to the Alberta Dental Association's volunteer program whereby dentists from larger centres visit rural areas where dental services are urgently needed, Dr. Young stated, "Since the inauguration of this program, we have enjoyed a better understanding with the provincial government . . . the plan is successful and reflects favourably on all members of our profession."

BRITISH COLUMBIA

College of Dental Surgeons of British Columbia.—This year the province has enjoyed the largest number of new registrants since the immediate post-war period. Forty dentists have registered with the College so far. A continuation of this trend during the next few years should substantially improve the ratio of dentists to population in the rural areas of the province.



Pinkerton

R. E. Cline,
President, Vancouver
and District Dental
Society.

Vancouver and District Dental Society.—R. E. McDonald, professor of Paedodontics at Indiana University School of Dentistry, was the guest clinician of the Vancouver and District Dental Society on October 2, 1962.

Dr. McDonald described the treatment of deep carious lesions and pulp exposure in deciduous and young permanent teeth. He gave a detailed description of the following procedures: indirect pulp capping, pulpotomy in permanent teeth, pulpotomy in deciduous teeth, partial pulpectomy, protection of exposed dentine, management of pulp exposure, and reactions of the pulp and supporting tissues to trauma.

Dr. McDonald was also a guest of the Intercity Paedodontic Study Club on the day preceding the meeting of the Vancouver and District Dental Society.

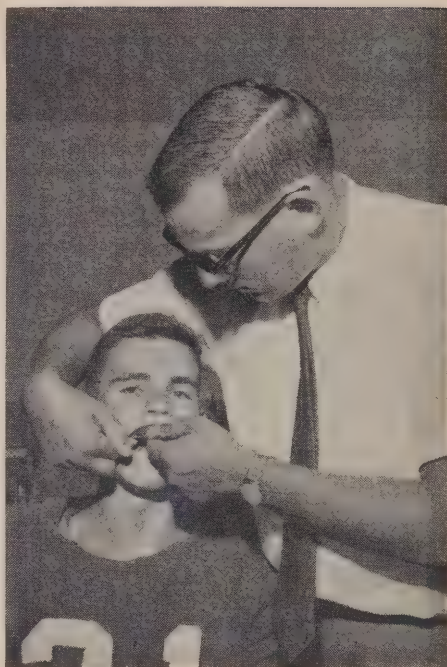
Interior Dental Society.—John Sproule of Seattle was the guest clinician at the fall meeting of the society held on October 27 in Kelowna. The subject of Dr. Sproule's address was "Timely Tips in Dentistry." There was also a showing of the Procter and Gamble Company's film, "Clinics in Dentistry."

MANITOBA

Winnipeg Dental Society.—An internationally noted dental radiologist, H. M. Worth of Victoria, British Columbia, was guest clinician at the November meeting of the Winnipeg Dental Society. Dr. Worth has appeared before nearly every dental society in Canada, and is particularly well known in the Toronto area, where he was formerly on the staff of the University of Toronto Faculty of Dentistry.

A large number of Winnipeg dentists and guests from outside the city attended Dr. Worth's two lectures on "Radiographic Appearance of the Maxillary Antrum as it concerns the Dentist," and "So-Called Periapical Areas." Dr. Worth's lectures were fully illustrated with slides showing anatomical variations in the normal antrum, and the differentiation between cysts and air cavities. The speaker particularly stressed the importance of closely examining the continuity of the lamina dura in diagnostic search for pathological conditions.

A short business meeting of the Winnipeg Dental Society was held in conjunction with the luncheon at the Royal Alexandra Hotel.



Pictured above is A. A. McNab of Erindale, Ontario taking a mouth impression for a Cookville, Ontario high school student preparatory to fabricating a protective mouth guard. Twelve dentists, members of the Halton-Peel Counties Dental Association, recently participated in a project which provided all football players at the Thomas L. Kennedy High School with protective mouth guards.

NEW BRUNSWICK

Saint John Dental Society Starts New Season.—Two regular monthly meetings of the society were held during the fall. A speaker from the Saint John United Appeal addressed members of the society at the September meeting. A "white elephant" sale highlighted the October meeting with a considerable number of items of dental equipment and supplies changing hands.

An interesting program has been scheduled by the new executive for the winter months. Members of the executive are: A. E. Cunningham, president; H. S. Cummings, vice-president; M. N. Brown, treasurer; and Arthur Steuermann, secretary.

ONTARIO

Halton-Peel Dentists Provide Protective Mouth Guards.—Twelve dentists, members of the Halton-Peel Counties Dental Association,

teamed up during September to provide latex rubber mouth guards for all students participating in football at the Thomas L. Kennedy High School in Cookville, Ontario.

Headed by A. A. McNab of Erindale, Ontario, the dentists visited the school where alginate impressions and plaster casts were made of the mouths of participating students. Latex protective mouth guards were fabricated in the dentists' offices and were subsequently returned to the school for distribution. A report describing experience with the mouth guards is to be prepared at the end of the present football season.

Commenting on this undertaking, the president of the Halton-Peel Counties Dental Association, J. Williams of Oakville, Ontario praised A. W. S. Wood of Toronto, the originator of the protective mouth guard program in Canada, and A. A. McNab for their efforts on behalf of this project.

Conduct Workshop on Dental Services for Rural Communities.—On November 21 a one-day workshop conference was convened in Toronto by the Dental Public Health Committee of the Ontario Dental Association to study dental health services for the public in rural Ontario communities.

The conference was opened by the Hon. Matthew Dymond, Minister of Health for Ontario. Participants included delegates from local dental societies and other important health-related organizations of many types as well as staff members of the Faculty of Dentistry, University, the Ontario Dental Association and the Royal College of Dental Surgeons. Among the latter were R. G. Ellis, J. Pedler, G. Nikiforuk, S. A. MacGregor, W. J. Dunn, R. M. Grainger, P. E. Currie, K. W. Davey, K. F. Pownall, B. Burns and G. T. Mitton.

QUEBEC

Mount Royal Dental Society.—Members of the Mount Royal Dental Society stood in respect for the passing of one of their most active former colleagues, the late Dr. Bernard Hyams, at the society's second general meeting on October 16, 1962.

E. R. Ambrose of the Faculty of Dentistry, McGill University was the guest clinician on this occasion. His topic was "Current Changes in Cavity Preparation for Amalgam and Pressure Amalgamation." He described the principles and advances in cavity preparation, and the requirements of matrix selection and placement with stabilization. Dr. Ambrose also stressed the suitability of topical stannous fluoride application while the rubber dam is in position.

A short business meeting followed the scientific program. Welcomed on this occasion as new members were E. Fellows, H. Faigan, L. Cramer, L. Prosterman, M. Dines, A. Wainburg, I. Margolese, S. Schwartz, H. Herman, and G. Saleh.

SASKATCHEWAN

Saskatchewan Report Supports Dentists.—Saskatchewan's Thompson Committee (Advisory Planning Committee on Medical Care) agrees with the province's dentists that Saskatchewan should place the whole emphasis of a public program on the

dental health of children. The committee's report, published in September, also supports the dentists' views that all municipal water supplies should be fluoridated. Also recommended was "that serious consideration be given at this time by the appropriate authorities to the establishment of a dental school at the University of Saskatchewan."

The Thompson committee was appointed in April 1960 to report to the Saskatchewan government on the best methods of improving health care of the residents of the province. In September 1961, at the request of the government, the committee submitted an interim report devoted chiefly to a plan of medical care insurance.

Recommendations of the committee concerning dental health can be summarized as follows:

1. Greater emphasis on preventive measures such as expanded and improved regional programs of dental health education for pre-school and school children, and fluoridation of communal water supplies.
2. Tax-supported dental treatment services for children, on a gradually increasing age-group basis, as dental personnel are able to meet known needs and only after intensive educational programs have been instituted.
3. More financial assistance for dental students and subsidies to encourage rural practice.
4. Serious consideration to the establishment of a dental school.
5. A new type of dental auxiliary to increase volume of service.

The committee's report makes many favourable references to the brief it received from the College of Dental Surgeons of Saskatchewan and to the brief the Canadian Dental Association submitted to the federal Royal Commission on Health Services.

Moose Jaw Dental Society.—A. E. Chegwin, director of dental services for the Saskatchewan Department of Public Health, addressing a recent meeting of the Moose Jaw Dental Society, described his observations of a recent visit to New Zealand. Dr. Chegwin was accompanied by Dr. J. J. Schachter of Saskatoon, representing the College of Dental Surgeons of Saskatchewan, and Mr. C. M. MacKay, representing the provincial government, on a mission to examine and report on the New Zealand dental nurse scheme. Unfortunately, Dr. Chegwin was unable to complete his studies as he became ill and was confined to hospital for some weeks following serious abdominal surgery. However, Dr. Schachter and Mr. MacKay were able to com-

plete their studies and some time in the future all three will submit reports of their observations.

J. F. Johnston, professor and chairman of the Department of Crown and Bridge and Partial Denture Prosthodontics, Indiana University School of Dentistry, gave a series of lectures in Moose Jaw and Saskatoon, September 28 and 29. More than seventy dentists attended these lectures, including some who traveled as much as 200 miles in order to attend in Moose Jaw.

International Items

3-YEAR DENTAL PLAN FIGURES RELEASED IN U.S.A.

The Dentists' Supply Company of New York has announced evaluation figures of the first commercial dental insurance plan in the United States. The company initiated the plan for its employees in August 1959 in conjunction with the Continental Casualty Company of Chicago. As of July 31, 1962, a total of 5,492 claims had been paid during the three-year period. In the third year of the plan's operation the total number of claims paid showed an increase of 129 per cent over the first year. However, the increase in actual dollar expenditures in terms of total cost of services rendered was only 48 per cent. The average cost of services rendered for claims paid showed a drop in the third year to \$36.26, compared with the first year's average of \$55.99.

AMERICAN DENTAL MEETINGS SCHEDULED

The American Academy of Oral Pathology will hold its seventeenth annual meeting from April 4-6, 1963, at the Hotel Seville, Miami Beach, Florida. The examination for elevation to fellowship will be held on April 4. Requests to take this examination must be received by January 1, 1963. Applications for

membership must be received by February 1, 1963. Further information may be obtained from R. J. Gerlin, School of Dentistry, University of Minnesota, Minneapolis 14, Minnesota, U.S.A.

The 19th annual Post-College Assembly of the College of Dentistry, Ohio State University, will be held April 17-18, 1963, at the College of Dentistry and the Ohio Union. The Assembly will feature discussions on surgery by Merle Hale, University Hospital, State University of Iowa; neoplasms by George Greene, sponsored by American Cancer Society; periodontics by Charles Conroy; and prosthodontics by B. Woelfel. In addition there will be a series of closed-circuit television demonstrations and table clinic demonstrations.

SOUTH AMERICA NOTES PUBLIC HEALTH DENTIST INCREASE

More public health dentists have graduated in South America in the last four years than in the preceding two decades, according to the Pan American Health Organization. The organization is the Western Hemisphere branch of the World Health Organization. According to a four-year report by the organization, the School of Public Health of the University of Sao Paulo, Brazil, was selected as regional centre for dental public health training. Courses, which were started in February 1958, were offered to eighty-five dentists from 19 countries. Some fifty-five dentists graduated from Sao Paulo during this four-year period as compared with 34 dental graduates from all Latin American public health schools in the preceding nineteen years.

Canadian Dental Schools

UNIVERSITY OF TORONTO

Predental Clubs Envisioned.—The Council of the Faculty of Dentistry hopes to see the formation of predental clubs at Ontario uni-

versities similar to those operated at the University of British Columbia and the University of Alberta. Predental clubs at the two western Canadian universities have proved an excellent means of supporting the recruitment of dental students.

Summary of Registration for Session 1962-63.—A total of 721 students are registered in the Faculty of Dentistry for the current academic year. This compares with 644 registered in 1961-62. The breakdown of registration is as follows:

Undergraduate course. — Preprofessional year, 125; first dental year, 123; second dental year, 120; third dental year, 105; fourth dental year, 85; special students, 7.

Dental Hygiene.—First year, 50; second year, 38.

Postgraduate and graduate courses.—Diploma courses, 21; bachelor of science in dentistry, 1; master of science in dentistry, 4; occasional students, 3.

Ontario Government Dental Students' Bursary Plan.—The Department of Health for Ontario is offering bursary assistance in order to encourage and assist residents in Ontario to take dental training with a view to entering general practice in areas of the province where there is a shortage of dentists. Ten bursaries of the value of \$1,000 per bursary are available to dental students during the current academic session. Each student who is awarded a bursary during the session is eligible to apply for similar assistance in subsequent sessions, but may not receive a bursary for more than three of the four dental years. Students who receive bursary assistance under the Ontario government plan have an obligation to enter general dental practice on graduation in a location in the province of Ontario which is acceptable to the Minister of Health. The return in service will be one calendar year for each academic year of bursary assistance given.

Staff News.—G. A. Morgan and D. H. J. MacDonald attended the First International Conference on Oral Surgery in London, England, July 1-4, 1962, where Dr. Morgan presented a paper, "The Problems in Diagnosis of Periapical Lesions." A. A. Antoni attended the annual meeting of the American Society of Oral Surgeons in New Orleans, October 22-28, 1962, where he presented a paper, "Fractures of the Mandibular Condyle."

G. Nikiforuk presented a paper, "Chemical Determinants of Tooth Susceptibility to Dental Caries" at the annual session of the American Dental Association, Miami Beach, Florida, October 31, 1962.

G. Nikiforuk, K. J. Paynter, J. G. Dale, D. L. Anderson, R. C. Burgess and G. E. Connell were staff members who presented papers at the Second Canadian Conference on Dental Research held in Banff, Alberta, October 9-11, 1962. Abstracts of these papers will be published in forthcoming issues of the *Journal of the Canadian Dental Association*.

H. K. Box Memorial Lecture.—The first Harold Keith Box Memorial Lecture was given on Monday, October 15, 1962 at the Faculty of Dentistry, University of Toronto to an audience of over two hundred and fifty persons. Harry Sicher, formerly professor of Anatomy, Loyola University School of Dentistry, Chicago, delivered the lecture on the subject of "The Role of Bone in Periodontal Disease."

Early in 1955, prior to Dr. Box's retirement from active teaching, a committee representing Canadian dentistry, consisting of C. H. Moses, chairman; J. H. Johnson (Faculty of Dentistry, University of Toronto); W. G. McIntosh (Canadian Dental Association); H. Bateman (Ontario Dental Association); W. J. Smith (Toronto Academy of Dentistry); and R. J. Godfrey (Royal College of Dental Surgeons of Ontario), secretary-treasurer, was convened and the H. K. Box Testimonial Fund was inaugurated for the purpose of securing an oil portrait of Dr. Box while he was still with us. The fund was very generously over-subscribed.

Mr. Archibald Barnes was commissioned to paint Dr. Box's portrait, which was presented to him and received by his son, Dr. Keith Box, at the joint meeting of the Canadian and Ontario Dental Associations in Toronto in May 1955. After Dr. Box's death, his widow presented the portrait to the Faculty of Dentistry where it now hangs as a constant reminder of his many contributions to the science of dentistry and to mankind.

The painting of the portrait and the establishment of the lectureship were made possible by the generous subscriptions to the Testimonial Fund by dentists throughout Canada. A total of over \$2,300 was subscribed and after the purchase of the portrait of Dr. Box, an amount of \$1,500 was turned over to the Faculty of Dentistry to found the lectureship.

As an internationally recognized research scientist, Dr. Box's work has added, in no small measure, to our knowledge of various

physiological and pathological processes and to the treatment procedures for periodontal diseases.

Other lectures will be given from time to time by outstanding speakers on topics relating to research and progress in the treatment of periodontal disease.

Royal Canadian Dental Corps

OFFICERS OF THE R.C.D.C. MILITIA AND THE R.C.D.C. ASSOCIATION MEET AT CAMP BORDEN

The annual meeting of the Royal Canadian Dental Corps Association was held at the R.C.D.C. School, Camp Borden during the first week-end in October. Many of the delegates from the R.C.D.C. Militia had just completed a course in National Survival Training in conjunction with the officers undertaking captain to major qualification.

Attending the executive meeting of the R.C.D.C. Association were: Col. J. F. Edgecombe of Saint John, N.B., Colonel Commandant of the R.C.D.C.; Brig. E. M. Wansbrough of Ottawa; Col. C. B. H. Climo of Ottawa; Lt.-Col. W. G. Campbell of Winnipeg; Lt.-Col. G. L. Ramsay of Saint John, N.B.; Lt.-Col. C. E. Woods of Ottawa; and Lt.-Col. N. L. Simon, Hamilton.

The following members were elected as the executive for 1962-63: honorary presidents — Col. L. E. Kent of Montreal and Col. W. E. Meldrum of Ottawa; immediate past-president—Lt.-Col. J. S. Goodfellow of Calgary; president—Lt.-Col. W. G. Campbell of Winnipeg; president-elect—Lt.-Col. G. L. Ramsay of Saint John, N.B.; 1st vice president—Lt.-Col. A. Z. Henry of Toronto; 2nd vice president—Lt.-Col. N. L. Simon of Hamilton; secretary—Col. C. B. H. Climo of Ottawa; and treasurer—Lt.-Col. C. E. Woods of Ottawa.

One of the highlights of the week was a mess dinner on Thursday, October 4 which was made the occasion for the presentation of this year's awards for the General Efficiency Militia Competition. Brigadier K. M. Baird, Director General of Dental Services for the Canadian Forces, in making the awards, complimented all the units who entered the competition for their fine showing.

"EDGECOMBE AWARD" AND "HUGH McLAREN MEMORIAL" TO BE CREATED

The Royal Canadian Dental Corps Association has announced that Col. J. F. Edgecombe, Colonel Commandant of the Corps has donated funds for the "Edgecombe Award" to be offered annually to the Militia unit judged to have done the most to promote the work of the R.C.D.C. Association during the year.

It was also announced that a suitably engraved gavel, to be used at all future meetings, will be purchased in memory of the late Col. H. R. McLaren who, in addition to his long and active association with the R.C.D.C. Militia, served as treasurer of the R.C.D.C. Association for many years.

GENERAL EFFICIENCY MILITIA COMPETITION AWARDS FOR 1962

The Moore Trophy, presented to the unit judged to be the most generally efficient during the training year, was won by No. 60 Dental Unit (Militia) with headquarters at Edmonton and commanded by Lt.-Col. S. G. Geldart.

The Trelford Trophy, presented to the unit judged to be the runner-up in the competition, was presented to No. 61 Dental Unit (Militia) with headquarters at Vancouver and commanded by Lt.-Col. P. L. Rondeau.

The Saskatchewan Dental Association Memorial Trophy, presented to the unit judged to be the most improved in general efficiency was also won by No. 60 Dental Unit (Militia) at Edmonton. This unit did not reach a trophy winning level in 1961, but progressed so notably this past year that it has the rare distinction of winning two trophies during the year.

An Honourable Mention scroll was awarded to No. 57 Dental Unit (Militia) with headquarters at Winnipeg and commanded by Lt.-Col. M. J. Snidal. This unit missed second place by a narrow margin and this scroll is in recognition of this high achievement.

R.C.D.C. OFFICERS ON DENTAL FACULTY STAFFS

During the past year, two officers have been requested by the deans of the Faculties of Dentistry at Dalhousie University and the

University of Manitoba to provide teaching assistance. The Director General of Dental Services has concurred in both requests and appropriate Army Commands have granted permission for these officers to participate.

Col. A. T. Roger, Command Dental Officer, Eastern Command is commencing his second consecutive year on the teaching staff in the Department of Oral Surgery at Dalhousie, and Major L. A. Richardson has recently joined the staff for this year's clinical programs at the Manitoba school.

Public Health

ONTARIO PUBLIC HEALTH DENTISTS MEET

Members of the Ontario Association of Public Health Dentists met in Toronto on September 28, 1962. Subjects considered at the meeting included: a new brochure entitled *Effective Methods for Preventing Tooth Decay*, prepared by the Department of Public Health of Alberta and the Faculty of Dentistry of the University of Alberta; recruitment of undergraduate dental students; and dental health education in the curriculum of teachers' colleges and normal schools.

S. L. Honey of Welland was selected chairman of the group for 1963. B. P. Martinello of Cooksville is the secretary.

DIAGNOSTIC, EDUCATIONAL AND TREATMENT SERVICES FEATURED IN WINNIPEG DENTAL HEALTH PROGRAM

The annual report of the Director of Dental Services of the City of Winnipeg Department of Health for 1961 describes that city's dental health program. Diagnostic and educational services are provided through dental inspection of kindergarten, grade 1 and grade 2 school children. Dental inspection is not conclusively diagnostic, but provides a source

from which recommendations, interpretations and general observations can be made to assist in improving dental health. Each teacher is encouraged to observe the dental inspection and is shown some diagnostic features for subsequent use in class group instruction. Teaching aids are provided for each classroom and demonstrations on their use are given by the visiting dentist.

For a child to be eligible to obtain free dental care, his parents must be medically indigent, resident in the city of Winnipeg, or in receipt of welfare assistance from the city. Treatment is made available to indigent children in kindergarten and grade 1, with maintenance care being provided by systematic recall appointments to children in higher grades and to welfare assistance recipients. Twenty per cent of the grade 1 school population are classified as eligible for treatment under the dental service scheme. This figure has been consistent for the past four years. In 1961 there were 852 children of families in receipt of welfare assistance on current dental treatment files, as compared to 659 in 1960, and 345 in 1959. Difficulty is experienced in reaching pre-school children because their parents are relatively unconcerned about preventive and interceptive dental treatment measures. In 1961 3,300 children were treated in the course of 19,366 clinic attendances. 2,428 children received complete dental care as provided by the dental clinics.

Mobile equipment was used during a 2-week period to provide dental care to a group of mentally retarded children from indigent families attending a special school.

VANCOUVER REPORTS HIGH LEVEL OF DENTAL CARE FOR GRADE 1 CHILDREN

Considerable effort is being put forth to maintain the high level of dental health in the grade 1 population which has been achieved in the past four years, according to D. J. Yeo, director of Dental Health Services, Greater Vancouver Metropolitan Health Service. During the period September 1960 to August 1961, 12,168 grade 1 children received dental inspection, 5,332 of these children (43.8%) were found in good dental health at the time of examination. Of those children who required treatment, 3,775 were treated in clinics and a further 2,341 attended family dentists. As a result, 11,648 grade 1 children (95.4%) attained a good level of dental health during the year and an additional 257

children (97.8%) began treatment but were never completed for various reasons. Dental health instruction was given to over 4,000 accompanying parents in the course of these treatment activities.

Although kindergarten and grade 1 enrolment has increased considerably, Dr. Yeo notes there has been no increase in staff or clinics. Thus it becomes increasingly difficult to maintain complete coverage. Only by greater effort, increased preschool attention and the use of new preventive measures has it been possible to do so. Last year, for the first time, all children received routine topical applications of stannous fluoride. A method was devised whereby all patients received topical applications in stages during the course of their regular treatment schedule.

ORTHODONTIC SERVICE ENVISAGED FOR NEWFOUNDLAND DENTAL PUBLIC HEALTH PROGRAM

D. G. Brett-Williams, director of Dental Services for the Newfoundland Department of Health, recently left that province to undertake post-graduate training in orthodontics at the Royal Dental Hospital, London, England. Upon his return, an orthodontic service is to be established as part of the dental public health program in Newfoundland. J. Russell has assumed charge of the province's dental program during Dr. Williams' absence.

FLUORIDATION-OCCLUSION TIE-IN SEEN

Malocclusion occurred two-and-one-half times more frequently among children drink-

ing non-fluoridated water, according to a study conducted by the New York Department of Health in Newburgh and Kingston, N.Y. The study revealed that 22.5 per cent of the Kingston children, aged 13 and 14, had handicapping malocclusions, whereas in fluoridated Newburgh, the rate was 9.4 per cent. The lower incidence is attributed to the lower rate of tooth decay and tooth loss among children who drink fluoridated water. The rate of decayed, missing or filled teeth per child was nearly four times greater for Kingston children who do not drink fluoridated water, than for children in Newburgh who do. Only 12.7 per cent of the Kingston children had normal occlusions as compared with 35.2 per cent of the Newburgh children. The cities each have a population of about 30,000.

FLUORIDATE FIRST, VOTE LATER IN WINDSOR

As a result of local controversy, citizens of Windsor, Ontario, voted on fluoridation at the December municipal elections. City council had previously authorized fluoridation of the municipal waters and the process was begun late in September.

Attempts were made by a local safe water committee to stop fluoridation, even by court action. A supreme court appearance had been scheduled for early October but the committee called it off on the grounds that a decision might not be given before the December 3 plebiscite.

According to reports, no complaints have been made about the taste or smell of the fluoridated water now in use.

Safe Food • Safe food is vital to survival. During the first five days, an individual needs at least one meal per day. During the next twenty-five days, an individual needs at least two meals per day. Sources of safe food include the family refrigerator (this should be used first to prevent spoilage in the event of power failure), the family stockpile (keep at least 14 days' supply), communal feeding units, and rations provided by municipal authorities. All other sources of food are dangerous. Additional precautions include personal cleanliness of food handlers, and cleanliness of food preparation and utensils. All meats must be thoroughly cooked. Use only safe water for food preparation. Remember that left-over food spoils quickly. Proper disposal of food wastes and garbage and the protection of food from flies and rodents are equally important.

CORRESPONDENCE

The Journal devotes this section to comments by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Canadian Dental Association. Your participation in this section is invited.

SOCIO-ECONOMIC TRENDS IN HEALTH SERVICES

To the Editor:

I take exception to the articles by Dr. M. G. Taylor and Mr. A. Andras and the editorial, "There are None So Blind . . ." in the September issue of the Journal.

Dr. Taylor and Mr. Andras approach health care in the usual way — condemnation of the profession. The Canadian Labour Congress is most outspoken in this regard. Labour is anti-professional. It disregards the effort and sacrifice which accompany professional training and maintenance of professional competence. Labour seeks the most in return for the least and withdraws service if its demands are not met, with scant concern for the general public. Furthermore, labour organizations have been associated with the attempts of sub-professional groups to gain legislative approval.

Labour contention to the contrary, dental care is available to Canadians. Twenty-five per cent seek care regularly, 50 per cent sporadically, and the remainder rarely or not at all. There are enough dentists for those who seek care regularly, though there may be a problem in distribution rather than of numbers of dentists.

Remuneration for professional services is deplorable. D.V.A. and I.N.H.S. fees are the worst. The remuneration of salaried dentists is likewise inadequate, having regard for the dentist's investment in his initial education.

Interference by dentists in authority over dentists' services is sometimes worse than governmental interference. Dental authorities at Shaughnessy Hospital compel D.V.A. beneficiaries to travel more than sixty miles for

dental treatment which could be rendered in their home communities.

A lack of proper prepayment and post-payment mechanisms compels the dentist to extend credit at roughly 5 per cent monthly interest. Yet he has neither the training nor the time to indulge in proper credit investigation. I am quite aware of the financial problems in health services. I could provide better services at less cost if all my accounts were prepaid or postpaid, but at least paid. As it is, I pay for time lost in fee discussion and receive endless abuse even after the fees are explained and estimates provided. In addition, I pay for general public abuse in the press and criticism because sub-professional personnel offer so-called services for which I have been trained for years.

I believe the public should know that services are available at reasonable cost. They should be informed that fees for dental services have advanced like the cost of many other commodities. National and provincial dental organizations should work with credit agencies, labour and government to educate the public and devise a plan to relieve the dentist of his financial burden and assure a fair return for his services.

I did not attend the C.D.A. convention, partly because of an indisposition, partly because the panel offered nothing new.

*E. L. Schumacher, D.D.S.,
P.O. Box 580,
Langley, B.C.*

To the Editor:

I was delighted to see your editorial, "There Are None So Blind . . ." in the September issue of the Journal. A courageous attack like this on the apathy of the members of one's own profession is to be applauded. Luckily, I was among the few who heard the two quite outstanding and thought-provoking addresses by Dr. M. G. Taylor and Mr. A. Andras. I notice that they were printed in the same issue of the Journal that carried the editorial about which I speak. However, I am deeply concerned that it will be too much effort for those who did not attend the lecture, to read either of the papers or the editorial.

One of the most difficult things I and a few others at this school try to inculcate into the students is that we are living in an era of rapid change. Not only are scientific advances being made but also social and economic ones. Most people strongly resist changes, scientific or otherwise and I pray that the generation we are educating at the moment, who will become the leaders of the profession in the next ten to fifteen years, will not turn away from such an opportunity as was presented at the Vancouver convention.

When I see such stirring editorials as this I feel they should be placed before the main articles in a place of prominence and importance.

J. R. Trott, B.D.S. (Adelaide),
Associate Professor of Periodontology,
Faculty of Dentistry,
University of Manitoba,
Winnipeg 3, Manitoba.

To the Editor:

I was happy to see your editorial in the September issue of the Journal about the failure of Canadian dentists to attend the Canadian Dental Association Panel on Socio-Economic Trends (at the annual meeting in Vancouver).

You will be happy to know that the convention committee for the 1964 annual meeting here (in Edmonton) is not scheduling any other clinic or function during the time allotted to the C.D.A.-sponsored panel at that meeting.

C. R. Castaldi, D.D.S. M.S.D.,
Professor of Paediatric Dentistry,
Faculty of Dentistry,
University of Alberta,
Edmonton, Alta.

STUDY GROUP FOR C.D.A. REFORM

To the Editor:

The yearly report, *Proceedings of the Royal College of Dental Surgeons* for 1961-62 is replete with many interesting items, decisions, and deliberations of our elected members to the Board of the Royal College which governs the practice of dentistry in Ontario. Reading it from the cover is a must for every practising dentist in Ontario.

One of the many items which attracted my attention and one which should be drawn to the attention of the membership of the Canadian Dental Association at large be-

cause of its grave importance to the survival of dentistry as a profession, is to be found in a tiny paragraph tucked away on page 95 under the heading of "Study Group for C.D.A. Reform."

In the first place it is most interesting to note that in the entire booklet this is the only heading of a paragraph which appears in quotation marks. It is possible that this was purposely done to attract the reader's attention to this paragraph, and if this is the purpose the secretary of the Royal College of Dental Surgeons of Ontario should certainly receive our commendations.

While I hesitate to comment on the brief presented by this organization to the Board of the Royal College, without full knowledge of its contents, I am certain that there are very few members at large who would not agree with the statement: "The contentions of the group are to the effect that dentistry's general organizational arrangements are not conducive to the establishment of an effective forum for discussion."

It seems that the brief "suggested an alteration in the present method of appointing Governors to the Canadian Dental Association."

Certainly an extra paragraph could have been allotted space in the annual report of the Royal College to enlarge somewhat on and clarify the reasons for these suggestions. Furthermore, I do not feel that the interests of the members at large are being well served by a summary dismissal of this brief by the Board members when it is stated that they were "of the opinion that no valid reasons had been presented for any alteration."

As a voting member I amongst many others would be greatly interested in at least some of the reasons that caused the Board members to arrive at this opinion, having urged the aforementioned group (Study Group for C.D.A. Reform) to present this brief.

Finally, I would like to state that I am not a member of this organization, but since it is composed of members of the Royal College I believe the annual report is remiss in deleting their names. I for one, and I am sure many others, would like to join this group. Perhaps through these columns this information could be made available to us.

S. W. Leslie, M.D., D.D.S.,
386 Bloor Street West,
Toronto, Ontario.

EDITOR'S NOTE. — Readers desiring further information concerning the matter raised by Dr. Leslie may direct their enquiries to the secretary of the Royal College of Dental Surgeons of Ontario.

BOOK REVIEWS

ORAL AND DENTAL DISEASES

H. H. Stones. Ed. 4. Edinburgh and London, E. & S. Livingstone Ltd., 1962. (Available from the Macmillan Co. of Canada Ltd.) 1056 p. Illus. \$23.40

This volume, now in its fourth edition, is one that has become, since its first edition in 1948, almost a classic in dental circles in Great Britain.

In its present edition it has been thoroughly brought up to date by the author and his collaborators, Professor E. D. Farmer and Professor F. E. Lawton. These men have read, screened and incorporated from a staggering list of recent literature into the text of this work. There are well over twelve hundred references to the research efforts of well-known authors throughout the world. These references, which are surprisingly up to date, are found at the end of each chapter as well as being listed alphabetically at the end of the text, to facilitate the readers further perusal of pertinent material, either by subject or author.

Many theories which have been disproved are omitted. Many new illustrations have either been added or have replaced those which were not suitable.

Illustrations, some of which are in colour, are well placed and thus become useful additions to the text. The text itself is well written and easily read.

As a general rule, normal developmental physiological and biochemical processes are briefly but adequately covered in an understandable way before malformations and pathological entities are discussed.

All areas of dental disease are covered in forty-two chapters, a most complete coverage of subject material, including, malformations of the jaws and associated parts, endocrine and nutritional disorders, dental caries and periodontal disease, pathological conditions of the hard and soft tissue as well as maxillo-facial injuries, cysts, tumours and diseases of the salivary glands.

The author has achieved a full and comprehensive documentation of the oral and dental diseases of the hard and soft structures

as well as the oral manifestations of systemic diseases, which are of interest to the dentist. This has been achieved in the logical sequence of aetiology, histopathology, clinical features and treatment.

The reviewer does not hesitate to recommend this volume as a comprehensive reference to the practitioner, teacher and the student at the undergraduate or postgraduate level.

R. H. Bingham.

MALNUTRITION AND FOOD HABITS

Anne Burgess and R. F. A. Dean. London, Tavistock Publications Ltd., 1962. £1. Os. Od.

In two hundred pages, the editors, both well known authorities, have succeeded in recreating the atmosphere of an international and interprofessional conference on this topic held in Cuernavaca, Mexico, in 1960. They have picked out the salient points of the discussions and presented them in a readable logical manner. The book should be read by all who are interested in programs of public health.

Beginning with the problems as seen by the nutritionist and the social scientist, the editors then continue with the presentation of current approaches to the relief of malnutrition and difficulties encountered in attempting to apply scientific knowledge to the public situation. The need for frequent and comprehensive, unbiased assessment of programs is stressed; some suggestions are offered in this regard.

This conference found its setting in the problems of protein-calorie malnutrition in developing countries; however, the basic knowledge presented is applicable in the more highly organized societies as well. While circumstances, beliefs and reactions vary in different societies, and in different parts of the same society, the fundamental problems of public health programs do not differ as markedly. Nominally devoted to the problems

of malnutrition, the book brings forth the concept of the integrated approach to public health; it is therefore, not a book which would be of interest to only one discipline. The theme could be applied to many public health problems. Emphasis has been placed on the role of the social scientist as an equal member of the "public health team."

Perhaps the most emphatic message that the editors convey is that the short-sighted, narrow minded approach to public health must end. Nutrition, for instance, cannot be separated from economics, agriculture, sanitation, preventive medicine, cultural habits, politics, or indeed from any of the other facets of a society, primitive or highly organized.

This book could well be recommended as compulsory reading for any student of public health. An awareness of the experience outlined in this publication might save many future public health programs from the failures met by so many previous schemes.

G. H. Beaton

CARIES SYMPOSIUM ZÜRICH: THE PRESENT STATUS OF CARIES PREVENTION BY FLUORINE- CONTAINING DENTIFRICES

H. R. Mühlemann and K. G. König. *Proceedings of an international symposium conducted November 2-3, 1961 at the Dental Institute, University of Zürich. Berne (Switzerland), Hans Huber Publishers, 1961. 174 p. Illus. Sw. Frs. 32.—*

This symposium was held some twelve months after the decision of the Council on Dental Therapeutics of the American Dental Association to grant official "recognition" to a brand of toothpaste containing stannous fluoride and for which therapeutic effectiveness was claimed. In the meantime an amine fluoride dentifrice for which significant evidence of cariostatic properties has been suggested, had been developed at the University of Zürich.

It is therefore understandable that various viewpoints were advanced at this conference.

Since this report records not only the nineteen papers presented but also the (verbatim) discussions immediately following, the pertinence of the above observation not infrequently becomes readily apparent to the reader. Moreover the reviewer found the verbatim reports of these discussions most welcome intermittent relief to the very high academic calibre of the reports of the essayists.

The purpose of this symposium was primarily to present the latest available evidence for or against the value of fluoride-containing dentifrices and from both sides of the Atlantic. Papers were presented by authors resident in Denmark, England, Germany, North America, Switzerland and Sweden. These reports also covered the mechanism of topically applied fluorides and new possibilities of caries control.

One of the most significant contributions was that of Gordon Nikiforuk of the University of Toronto. The hypothesis he suggested and tentatively supported by data presented, is that a reciprocal relationship exists between fluoride and carbonate concentration in tooth enamel and that both these components are significant determinants of tooth susceptibility to caries. He also postulated that in the enamel apatite crystal the carbonate ion substitutes for or replaces the phosphate ion.

Nikiforuk demonstrated that enamel samples on non-carious teeth from a fluoride area had less carbonate than teeth from a non-fluoride area; also that from a fluoride area non-carious teeth had less carbonate than carious teeth. He suggests as a possible caries susceptibility index a carbonate fluoride ratio, defined as:

$$\frac{\% \text{CO}_2}{\text{F—ppm}} \times 100$$

which index is supported by the findings of this study.

The summary of this conference would appear to confirm the decision of the American Dental Association to place the stannous fluoride dentifrice developed by Muhler in Group B, which of course "means that there is insufficient evidence to justify present acceptance but there is reasonable evidence of usefulness and safety."

To all those persons desirous of a better understanding of the current status of the prevention of dental caries, especially by topical means, this report is essential.

F. McCombie

ORBAN'S ORAL HISTOLOGY AND EMBRYOLOGY

H. Sicher. Ed. 5. St. Louis, C. V. Mosby Co., 1962. 406 p. Illus. \$10.50

This is a textbook with a split personality. The fourth edition had outlived its use as a teaching text because it had not kept pace with concepts gained from recent research. It was obvious that a major revision was required. A new chapter on the Histochemis-

try of Oral Tissues and rewritten chapters on Enamel, Dentine, Development of the Face and Oral Cavity, Salivary Glands, and Maxillary Sinus have made these portions of the text required reading for dental students. Contributing editors of the new sections deserve praise for their excellent treatment of the subject matter. However, the unrevised chapters suffer by comparison. Although many fine descriptions of the tissues are presented, too many archaic and one-sided theories remain. This is substantiated by the fact that of 183 references in eight of these chapters, only 25 are of more recent vintage than 1945. In spite of this criticism, the present book is the best available text on dental histology. With one more revision it can become outstanding.

A. M. Hunt

CHEMISTRY AND PREVENTION OF DENTAL CARIES

R. F. Sognnaes. Springfield, Illinois, C. C. Thomas, 1962. (Available from the Ryerson Press, Toronto) 231 p. Illus. \$10.00

This book which consists of contributions by eight recognized authorities in their respective fields, is a detailed documentation of present-day knowledge of the chemical processes associated with the development of dental caries.

To unravel the complex mechanisms involved, the problem is considered in relationship to the microstructure and chemical composition of teeth, the oral bacterial flora, the chemistry of food and saliva, and the solubility properties of teeth. The final chapter deals with various approaches to caries prevention.

At the end of each chapter there is an extensive and up-to-date list of references.

This is a most valuable book for the dental teacher and student, the researcher, and the dentist.

J. Kreutzer

VISTAS IN ORTHODONTICS

B. S. Kraus and R. A. Riedel. Philadelphia, Lea and Febiger, 1962. (Available from the Macmillan Company of Canada, Ltd., Toronto) 897 p. Illus. \$11.00

This text is a tribute to Alton W. Moore on the occasion of the first meeting of the University of Washington Orthodontic Alumni

Association. It is a series of twenty-five essays by some of the foremost teachers, scientists, and orthodontic practitioners of our time. All are recognized for their successful efforts in the field of orthodontics.

The book is divided into nine sections dealing with the clinical practice of orthodontics as well as with related scientific subjects.

Section 1, a tribute to Dr. Moore, contains essays by J. A. Salzmann, A. T. Baum and R. A. Riedel. A. G. Brodie writes on orthodontic education and A. Thornton Taylor on orthodontics in Australia in Section 2. Scientific articles on the skull and periodontium comprise Section 3. These are written by Harry Sicher, Kaare Reitan, and M. L. Moss. Section 4 is devoted to cephalometrics with contributions by R. M. Ricketts, C. C. Steiner, T. M. Graber and W. B. Downs. Essays on mechanics follow in Section 5 by C. J. Burstone, O. A. Oliver, W. H. Oliver, S. J. Kloehe and Gustav Korkhaus. Heredity is discussed in Section 6 by Anders Lundström and H. J. Noyes. In Section 7 J. R. Thompson, R. E. Moyers, and J. H. Hovell consider function and its relation to orthodontics. The importance of growth is discussed in Section 8 by Arne Björk and C. H. Tweed. W. L. Wylie summarizes in Section 9.

As might be expected from this list of authors, the essays are as divergent in their subject matter as they are in the philosophies presented. The emphasis on principles rather than techniques reflects Dr. Moore's view that the specialty of orthodontics is built on biology and not on mechanics.

This book will be welcomed by the orthodontic practitioner, teacher and researcher. The sections on basic science, function and growth will be of interest to any student of dentistry. The book, however, is not recommended as an undergraduate text. It is well written, well illustrated, and represents a crystallization of thoughts of the outstanding members of the specialty today.

R. W. Faith

CLINICAL APPLICATION OF THE TWIN-WIRE MECHANISM

Paul Geoffrion. Paris, Julien Prélât, 1962. 227 p. Illus. N. F. 49.50

Canada's leading practitioner and teacher of the Johnson philosophy, Paul Geoffrion, recognizing that his English-speaking confreres were having difficulty with his book, "La Methode de Johnson," has obligingly translated it for us.

The subject matter is presented comprehensively in two parts. The first, in a

series of five chapters deals with the philosophy, the component parts with auxiliaries, and appliance construction. The second, in careful detail, outlines and illustrates treatment procedures for a variety of malocclusions.

This is the first text compiled on this subject, and translation or not, it is a well writ-

ten work with a high degree of readability and with the same excellent illustrations as used in the original. It will prove useful to the orthodontist familiar with the technique, stimulating to those using other techniques and worthwhile reading for students.

R. D. Leuty

ADDITIONS TO THE LIBRARY

ENGEL, G. L. Fainting. 2nd ed. Springfield, Thomas, 1962. 196 p. \$8.25.

FARRELL, J. H. Partial denture designing. London, Henry Kimpton, 1962. 166 p. illus. \$9.00.

FINN, S. B. Injuries to the teeth of children. (Practical Dental Monographs, Sept. 1962.) 42 p. illus.

FINN, S. B. et al. Clinical pedodontics. 2nd ed. Philadelphia, Saunders, 1962. 740 p. illus. \$15.70.

GOLDMAN, H. M. et al. An introduction to periodontia. 2nd ed. (Postgraduate dental lecture series.) St. Louis, Mosby, 1962. 367 p. illus. \$8.40.

MILLER, C. J. An atlas of inlays, crowns and bridges. Philadelphia, Saunders, 1962. 268 p. illus. \$19.45.

NORDSTROM, N. Jr. The rights and rewards of the medical witness, and medical and dental appraiser. Springfield, Thomas, 1962. 104 p. \$5.50.

OSLER, (Sir) W. Sir William Osler; aphorisms from his bedside teachings and writings collected by Robert Bennett Bean. Springfield, Thomas, 1962. 164 p. \$4.50.

SILVERMAN, M. M. Occlusion; in prosthodontics and in the natural dentition. Washington, Mutual Publishing Company, 1962. 308 p. illus. \$18.10.

TAYLOR, R. M. S. The human palate. New York, S. Krager, 1962. 108 p. illus. \$4.45.

U. S. PUBLIC HEALTH SERVICE. Proceedings of the National Conference on Water Pollution, December 12-14, 1960. Washington, D.C. Washington, Government Printing Office, 1961. 607 p. \$2.25.

U. S. VETERANS ADMINISTRATION. Interim report of oral exfoliative cytology; transactions of Conference on Oral Exfoliative Cytology, November 4, 1960. Washington, Government Printing Office, 1961. 74 p. illus. \$1.50.

WILSON, W. H. and LANG, R. L. Practical crown and bridge prosthodontics. New York, McGraw-Hill, 1962. 254 p. illus. \$15.65.

YEAR BOOK OF DRUG THERAPY, 1961-1962. Edited by Harry Beckman. Chicago Year Book Medical Publishers, 1962. 597 p. \$9.25.

IN MEMORIAM

HENRY HAROLD ABELL—Dr. H. H. Abell of New Liskeard, Ontario died on September 14, 1962. He was 67. Dr. Abell was born in Owen Sound, Ontario in 1895. He received his early education at Owen Sound Collegiate Institute. In 1918 Dr. Abell graduated from the Royal College of Dental Surgeons of Ontario. From that time until 1941, he practised in Cobalt, Ontario, then moved to New Liskeard where he practised until recently. Surviving are his wife Ann, and his son, Dr. Norman Abell.

JOHN FREEMAN BLAIR—Dr. J. F. Blair of London, Ontario died on October 9, 1962. He was 75. Born in London, Dr. Blair graduated from the Royal College of Dental Surgeons of Ontario in 1908. He practised in Manitoba from 1903 to 1915. At that time he enlisted with the Canadian Army Dental Corps and served overseas in both France and England. Dr. Blair won the Distinguished Service Order while attached to advanced medical units, and was decorated by King George V at Buckingham Palace. He was Deputy Director of Dental Services for the Canadian Army in England and attained the rank of major. From 1920 until 1939, Dr. Blair again practised in London, Ontario. In due course Dr. Blair became a member of the Dental Corps Committee of the Canadian Dental Association which waited on the Minister of National Defence and consummated the reorganization of the military dental services in 1938-39. At the outbreak of the Second World War he became District Dental Officer for Military District No. 1 with headquarters in London, Ontario. In 1940 Dr. Blair went overseas with No. 2 Dental Company and later returned to Canada as District Dental Officer of Military District No. 13 at Calgary. He subsequently returned to London as District Dental Officer for Military District No. 1. He was a past president and an honorary life member of the London and District Dental Society. Dr. Blair was also attached to the Westminster Hospital (Department of Vet-

erans Affairs) in London, Ontario. He is survived by his son, Boyce of London; a sister, Miss Amy Blair of New York; and a brother, Edward of Frankenmuth, Michigan.

ROBERT W. CONN—Dr. R. W. Conn of New Westminster, B.C., died on August 5, 1962. He was 81. Born in Stonewall, Manitoba in 1881, Dr. Conn attended the Chicago College of Dental Surgery (Loyola University). He graduated in 1911. He practised in Wetaskiwin and later in Edmonton until 1925 when he moved to Vancouver. Dr. Conn then moved to New Westminster where he was school dentist for five years, later going into private practice. He served overseas in the first world war with the Canadian Dental Corps. Dr. Conn is survived by his wife, Emma; a son, Robert and a daughter, Mrs. Allan Wark.

JOSEPH WILFRED CORMIER—Dr. J. W. Cormier of Amherst, Nova Scotia died on September 18, 1962. He was 63. Born in Bathurst, New Brunswick, Dr. Cormier studied at the University of Maryland School of Dentistry, Baltimore, and graduated in 1919. He is survived by his wife, two daughters and five sons.

J. ROMEO DUFRESNE — Le Dr J. R. Dufresne de Malartic, P. Qué., âgé de 59 ans, est décédé le 1er septembre 1962. Il était né à St-Hyacinthe, P. Qué. en 1902. Le Dr Dufresne obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1930.

BERNARD LAWRENCE HYAMS—Dr. B. L. Hyams of Montreal, P. Quebec died on September 1, 1962. He was 63. Born in Montreal in 1899, Dr. Hyams studied dentistry at McGill University and graduated in 1921 as a medallist. He specialized in

orthodontics following postgraduate study at New York. He was a diplomate and Fellow of the American Board of Orthodontics, a member of the North-Eastern Society of Orthodontists, and a charter member of the Mount Royal Dental Society, Montreal. A member of both the American and Canadian Dental Associations, Dr. Hyams was also a past president of the Montreal Society of Orthodontics and a former staff member of McGill University. He is survived by his wife, Florence; a son, Dr. Brahm Hyams; a daughter, Mrs. Raymond Rudin; three sisters, Mrs. Rose Soskin, Mrs. Hattie Sigler and Mrs. Dorothy Colle; a brother, Henry; and three grandchildren.

GORDON MARSHALL JACKSON — Dr. G. M. Jackson of Hamilton, Ontario died on October 21, 1962. He was 65. Dr. Jackson was born in Ontario in 1897. He received his early education in Regina and graduated from the Royal College of Dental Surgeons of Ontario in 1923. From that time he practised in Hamilton. During World War I he served with the Canadian Expeditionary Force. He is survived by his wife, Mary Maude, and one son, Dr. Bruce Jackson of Kitchener.

HUGH CAMERON MacINTOSH—Dr. H. C. MacIntosh of Glace Bay, Nova Scotia died on July 26, 1962. He was 79. Dr. MacIntosh was born in Argyle, Guysborough County, Nova Scotia, in 1883. He studied dentistry at Tufts University Dental School in Boston, U.S.A., and graduated in 1907. Dr. MacIntosh practised in Massachusetts, U.S.A. and in Glace Bay. He was a former member of the Nova Scotia Provincial Dental Board. He is survived by four sisters.

THOMAS JAMES McDOWELL—Dr. T. J. McDowell of Milverton, Ontario died on August 13, 1962. He was 91. Born in Lis-towel, Ontario in 1871, Dr. McDowell received his preliminary education there and in Toronto. In 1897 he graduated from the Detroit Medical College, Dental Department and practised in Detroit for three years. He returned to Canada and attended the Royal College of Dental Surgeons of Ontario, graduating in 1902. In 1952 he was made an honorary life member of the Royal College of Dental Surgeons of Ontario. He is survived by his wife, Helen.

JAMES CARL McLISTER—Dr. J. C. McLister of Windsor, Ontario died in September of this year. He was 64. Born in Bothwell, Ontario in 1898, Dr. McLister graduated from the Royal College of Dental Surgeons of Ontario in 1921. He practised in Sandwich and later in Windsor. He is survived by his wife, Mrs. J. C. McLister.

GORDON DEMPSTER PETERS—Dr. G. D. Peters of Winnipeg, Manitoba died on August 11, 1962. He was 77. Born in Moncton, New Brunswick in 1885, Dr. Peters studied at the Philadelphia Dental College (Temple University), and graduated in 1913. He practised in Winnipeg until his retirement in 1957. He is survived by his wife, Vida; a daughter, Mrs. G. Cavaghan (Peggie); two sisters, Mrs. T. R. Aitken and Mrs. W. F. Seller; and two grandsons.

JOSEPH-LEOPOLD SAVAGE — Le Dr J.-L. Savage de Montréal, âgé de 59 ans, est décédé le 23 septembre 1962. Il était né à Ste-Philomène, P. Qué. en 1913. Le Dr Savage obtint son diplôme en chirurgie dentaire à l'Université de Montréal en 1942.

ALEXANDER VINCENT SCRUTTON—Dr. A. V. Scrutton of London, Ontario died on September 29, 1962. He was 43. Born in Kingston, Ontario in 1919, Dr. Scrutton received his early education at Regiopolis College in that city. During the Second World War Dr. Scrutton served with the Canadian Dental Corps, attached to the Royal Canadian Navy. Dr. Scrutton entered the University of Toronto upon return to civilian life, graduating in 1950. In 1961 he was president of the London and District Dental Society. Surviving are his wife, Violet; three daughters, Mary Margaret, Katherine Ann and Lorraine; and brother, Captain Matthew Scrutton of Kingston.

ROBERT MARTIN STEWART—Dr. R. M. Stewart of Markham, Ontario died on October 5, 1962. He was 86. Born in Whitby, Ontario in 1876, Dr. Stewart graduated from the Royal College of Dental Surgeons of Ontario in 1904. He was made a life member of the Royal College of Dental Surgeons of Ontario in 1954. Dr. Stewart is survived by his wife, Maud and a daughter, Mrs. Roy Barnum (Ruth Marjorie).

JAMES SOMERVILLE STRACHAN—Dr. J. S. Strachan of Fort William, Ontario died on September 16, 1962. He was 75. Dr. Strachan was born in Jamestown, Ontario in 1887. In 1911 he graduated from the Royal College of Dental Surgeons of Ontario. From that time he practised in Fort William. He was a past president of the Thunder Bay Dental Association. In 1959 he was made a life member of the Royal College of Dental Surgeons of Ontario. He is survived by a brother, Dougald Strachan of Bluevale, Ontario.

FRANKLIN KNIGHT SWITZER—Dr. F. K. Switzer of Willowdale, Ontario died on September 26, 1962. He was 75. Born in Dublin, Republic of Ireland in 1887, Dr. Switzer received his early education in North Dakota in 1906. He graduated from the Chicago College of Dental Surgery (Loyola University) in 1910, and for the next twenty years practised in Saskatoon and Regina. From 1941 until 1951, Dr. Switzer was a travelling dentist for the Ontario Department of Health. From 1951 he practised in Toronto until his retirement this year. Dr. Switzer is survived by a daughter, Mrs. P. G. Pelling (Helen Elizabeth) and two sons, Dr. Franklin Grey and Robert.

LAWRENCE WESELAKE—Dr. L. Weselake of Winnipeg, Manitoba died on October 12, 1962. He was 64. Born in Winnipeg, Dr. Weselake graduated from The Royal College of Dental Surgeons of Ontario in 1923. He is survived by his sons, Lawrence Weselake of Ontario, Frederick Weselake of Winnipeg, George Weselake of Alberta; a daughter, Carol Ann Elizabeth Louise of Winnipeg; his mother, Mrs. Katherine Weselake of Vancouver; brothers, Dr. J. V. Weselake of Vancouver, Edward Weselake of San Diego, California; sisters, Mrs. Annette Meder, Mrs. Myrtle Moudroff, and Mrs. Louise Murphy, all of California; and two grandchildren.

CHARLES EDWARD WILLIAMS—Dr. C. E. Williams of Toronto, Ontario died on September 17, 1962. He was 77. Born in Strathroy, Ontario in 1885, Dr. Williams was educated in Toronto. He graduated from the Royal College of Dental Surgeons of Ontario in 1910. From 1915 until 1918 he served in the army as a lieutenant. He practised in both Toronto and Oakville. Surviving are his wife, Hazel Kathleen and his son, Bruce Edward Williams.

Radioactive Exposure • Exposure to radiation increases the danger from disease. Exposure to large amounts of radioactive fallout will produce radiation sickness. Provide a suitable fallout shelter to reduce exposure.

Attack Warning Signals • The Alert: a steady note on the sirens for three minutes means an attack is possible or radioactive fallout from an attack elsewhere is expected. Turn on your radio; and while one member of the family listens for instructions, the others should proceed with household preparations. Take Cover: a rising and falling note on the sirens for three minutes or more means danger of an immediate attack in your area. Take cover immediately. The All Clear will be announced only on the radio and not by sirens. Announcement of the All Clear, unless stated, does not cancel the Alert. The All Clear is given when your area is expected to be free from radioactive fallout or attack for more than an hour.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1963	Toronto, Ontario	May 19-22
1964	Edmonton, Alberta	June 28-July 1
1965	Quebec City, Quebec	May 30-June 2
1967	Toronto, Ontario	(Centennial Celebration of Dentistry in Canada)

FUTURE EVENTS

Date	Function	Location	Officer	Address
Feb. 16-23, 1963	Second Caribbean Dental Convention	Trinidad Hilton Hotel, Port-of- Spain, Trinidad	Dr. A. V. Awon	43-45 Frederick Street, Port-of- Spain, Trinidad
March 28-29, 1963	Alberta Dental Association	Hotel Palliser, Calgary	Dr. D. L. Thompson	206 Medical Arts Building, Calgary, Alberta
July 1-3, 1963	Atlantic Provinces Dental Convention	Fredericton, New Brunswick	Dr. K. A. Hetherington	98 York Street, Fredericton, New Brunswick

POSTGRADUATE AND REFRESHER COURSES (CANADA)

TORONTO—The Faculty of Dentistry, University of Toronto offers a course leading to the Bachelor of Science in Dentistry degree in the field of **ANAESTHESIA AS IT APPLIES TO DENTISTRY**. This full-time course extends over a period of twelve months beginning in September 1963. The final date for receiving applications is March 1, 1963. Enquiries and requests for application forms should be directed to the Chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 2, Ontario.

The School of Hygiene, University of Toronto offers a postgraduate course in **PUBLIC HEALTH** for medical health officers and other physicians, dentists, veterinarians, nutritionists, bacteriologists, virologists, nurses, and other public health workers, February 4-8, 1963. The course content will include nutrition, growth and development of children, dental health, infectious diseases, recent advances in virology, and environmental health. Tuition fee \$60 (whole course), \$15 (one day only). Enquiries and requests for application forms should be directed to the Division of Postgraduate Medical Education, Faculty of Medicine, University of Toronto, Toronto 5, Ontario.

POSTGRADUATE AND REFRESHER COURSES (U.S.)

ALABAMA—February 8-10, 1963—Functional Aesthetic Restoration Procedure

ALABAMA—February 15-17, 1963—Removable Orthodontic Appliance Construction (limited to practising orthodontists)

COLUMBIA—February 4-8, 1963—Begg Treatment Method

NEW YORK—February 13-15, 1963—Immediate Dentures

NORTHWESTERN—February 11-13, 1963—Basic cephalometric radiography for the orthodontist

OHIO STATE—February 18-22, 1963—Removable Partial Dentures

OHIO STATE—February 25-March 1, 1963—Complete Denture Prosthodontics

PENNSYLVANIA—February 25-March 1, 1963—Biology of the Dental Pulp, Part 1

PENNSYLVANIA—February 25-March 1, 1963—Partial Dentures

TEMPLE—February 4-8, 1963—Periodontal Prosthesis

TEMPLE—February 16, 1963—Advanced Course in Practice Administration

TEMPLE—February 18-23, 1963—Advanced Fixed Prosthesis

TUFTS—February 6-8, 1963—Hospital Management for the Dental Patient

TUFTS—February 25-March 1, 1963—Orthodontics for the General Practitioner

Due to lack of space the Journal cannot accommodate all announcements of foreign dental meetings and postgraduate and refresher courses. Readers are invited to write to C.D.A. headquarters for information concerning unlisted meetings and courses. Further information concerning listed meetings and courses should be sought from the sponsoring institution.

ANNUAL INDEX, 1962 — VOLUME 28

A

- AMBROSE, E.R.—Pressure Amalgamation—571
 ANDERSON, D.L.—Staining of Ribonucleic Acid—166 (Research Annotation)
 ANDERSON, W.A.D.—Pathology — 50 (Book Review)
 ANDERSON, W.H.—Oral Surgery—339 (Book Review)
 ANDRAS, A.—Socio-Economic Trends in Health Services: Labour Looks at Health Care—564
 ANNUAL MEETING
 C.D.A. Convention Supplement—197
 C.D.A. 61st Annual Meeting—55, 269,
 ANTIBIOTICS
 Francis, L. E. et al—Control of Post-extraction Bacteraemias—683
 Weyman, Joan and Porteous, J.R.—Discoloration of Teeth Possibly due to Administration of Tetracyclines: A Preliminary Report—718 (Abstract)
 ANTONI, A.A., VAN DE MARK, T.B., GAJDA, J. and WEINBERG, S.—Pathological Fracture of the Mandible Associated with Peripheral Giant Cell Reparative Granuloma—171 (Case Report)
 ARCHER, W.H.—Oral Surgery—339 (Book Review)
 ASSOCIATION, The—35, 130, 179, 252, 325, 399, 457, 525, 725, 796.

B

- BAIRD, K.M., SHILLINGTON, G.B. and PRO-
 THEROE, D.H.—A Pilot Study on the Advanced Training and Employment of Auxiliary Dental Personnel in the Royal Canadian Dental Corps—A Preliminary Report—627
 BHASKAR, S.N.—Synopsis of Oral Histology—732 (Book Review)
 BIBBY, B.G.—Prevention of Dental Caries—313 (Abstract)
 BIOCHEMISTRY AND PHARMACOLOGY
 Francis, L.E. et al—Further Studies on a Physiological Antihistamine—241 (Research Annotation)
 Kleinberg, I.—Further Studies on the Production of In Vivo Plaque pH Curves, In Vitro—242 (Research Annotation)
 Lussier, J.-P.—Citrate Metabolism in Bone (Le Metabolisme Citrate dans L'Os)—243 (Research Annotation)
 Tuba, J. et al—Nature of the Cariostatic Action of Dietary Phosphates—243 (Research Annotation)
 BLAKE, G.C. and TROTT, J.R.—Periodontology—463 (Book Review)
 BOOK REVIEWS
 Anderson, W.A.D.—Pathology—50
 Archer, W.H.—Oral Surgery—339
 Bhaskar, S.N.—Synopsis of Oral Histology—732
 Blake, G.C. and Trott, J.R.—Periodontology—463
 Brecker, S.C.—Crowns: Preparation of the Teeth and Construction of the Various Types of Full Coverage Restorations—190
 Burgen, A.S.V. and Emmelin, N.G.—Physiology of the Salivary Glands—470
 Burgess, Anne and Dean, R.F.A.—Malnutrition and Food Habits—807
 Burket, L.W.—Oral Medicine, Diagnosis and Treatment—190
 Butcher, E.O. and Sognnaes, R.F.—Fundamentals of Keratinization—661
 Cohen, M.M.—Pediatric Dentistry—264
 Cope, Z.—Sir John Tomes, Pioneer of British Dentistry—51

- Council on Dental Therapeutics of the A.D.A.—Accepted Dental Remedies, 1962—339
 Crabb, H.S.M. and Darling, A.I.—The Pattern of Progressive Mineralization in Human Dental Enamel—338
 Department of National Health and Welfare—National Health Grants 1948-1961—407
 Geoffrion, Paul—Clinical Application of the Twin-Wire Mechanism—809
 Her Majesty's Stationery Office—Report of the Medical Research Council for the year 1960-1961—732
 Kerr, A.C.—Salivary Secretions in Man—596
 Kobler, John—The Reluctant Surgeon—408
 Kraus, B. S. and Riedel, R. A.—Vistas in orthodontics—809
 Lucia, V.O.—Modern Gnathological Concepts—536
 Macdougall, J.C. and Nixon, G.S.—A Guide to Dental Therapeutics—469
 McClure, F.J.—Fluoride Drinking Waters—661
 McGregor, I.A.—Fundamental Techniques of Plastic Surgery and their Surgical Applications—662
 Model, W.—Drugs of Choice—597
 Muhlemann, H. R. and König, K. G.—Caries Symposium Zürich: The Present Status of Caries Prevention by Fluorine-Containing Dentifrices—808
 Peterson, S.—The Dentist and his Assistant—191
 Pindborg, J.J. and Marvitz, L.—The Dentist in Art—469
 Proskauer, C. and Witt, F.H.—Bildgeschichte der Zahnheilkunde (Pictorial History of Dentistry)—733
 Salzmann, J.A.—Roentgenographic Cephalometrics—407
 Samat, B.G. and Laskin, D.M.—Diagnosis and Surgical Management of Diseases of the Temporomandibular Joint—537
 Schram, W.R.—A Manual of Oral Surgery Techniques—662
 Shepard, E.E.—Technique and Treatment with the Twin-Wire Appliance—265
 Sicher, H.—Orban's Oral Histology and Embryology—808
 Sognnaes, R. F.—Chemistry and Prevention of Dental Caries—809
 Stones, H. H.—Oral and Dental Diseases—807
 Tarpley, B.W.—Technique and Treatment with the Labio-Lingual Appliance—264
 Trapezzano, V.R.—A Comprehensive Review of Dentistry—733
 Tylman, S.D., Keys, D.A., Knutson, J.W., Noyes, H.J., Robinson, H.B.G. and Waldron, C.W.—Yearbook of Dentistry, 1961-62 Series—468
 University of Michigan—Handicapped Children: Problems, Programs, Services in Michigan—597
 Walker, D.G.—Malformations of the Face—537
 BRECKER, S.C.—Crowns: Preparation of the Teeth and Construction of the Various Types of Full Coverage Restorations—190 (Book Review)
 BROWN, H.K.—1961 Report on the Brantford Fluoridation Caries Study—650 (Abstract)
 BROWN, H.K.—The Health Professions and the Challenge of Widening Horizons and Changing Patterns—1
 BROWN, H.K.—Training of Dentists for Emergency Service—755
 BURGEN, A.S.V. and EMMELIN, N.G.—Physiology of the Salivary Glands—470 (Book Review)
 BUTCHER, E.O. and SOGNAES, R.F.—Fundamentals of Keratinization—661 (Book Review)
 BURGESS, ANNE and DEAN, R.F.A.—Malnutrition and Food Habits—807 (Book Review)
 BURGESS, R.C., MONDROW, T.G., NIKIFORUK, G. and COMPTON, F.H.—Topical Stannous Fluoride as a Caries Preventative for Pre-school Children—312 (Research Annotation)
 BURKET, L.W.—Oral Medicine, Diagnosis and Treatment—190 (Book Review)

C

- CAMPBELL, J.M.—Fifty Years Ago—304
 CANADA AND THE PROVINCES—35, 131, 179, 255, 327, 401, 461, 526, 590, 654, 726, 797.
 CANADIAN DENTAL ASSOCIATION
 BUREAU OF ECONOMIC RESEARCH
 Dental Students' Register: 1961-62—389
 Dental Personnel in Canada, 1962—451
 Fluoridation in Canada, 1962—520
 COUNCIL ON EDUCATION
 Comments on the Survey of Dentistry in the United States: 3. Dental Education—248
 Minimum Requirements for the Approval of a School of Dental Hygiene—455
 COUNCIL ON PUBLIC HEALTH
 Comments on the Survey of Dentistry in the United States: 1. Dental Public Health—26
 COUNCIL ON RESEARCH
 Comments on the Survey of Dentistry in the United States: 4. Dental Research—316
 DENTAL SERVICES COMMITTEE
 Comments on the Survey of Dentistry in the United States: 2. Dental Practice—174
 SECRETARIAT
 Federal Income Tax Returns by Members of the Dental Profession (for 1961)—31
 Federal Income Tax Returns by Members of the Dental Profession (for 1962)—787
 TRUSTEES OF C.D.A. PENSION AND INSURANCE PLANS
 Announcement: Canadian Dental Association Pension and Insurance Plans—724
 C.D.A. RETIREMENT SAVINGS PLAN—54, 268,
 CANADIAN DENTAL SCHOOLS—44, 185, 259, 334, 404, 464, 531, 592, 729, 800
 CARIES
 Knutson, P.M.—Early Diagnosis of Oral Precancerous Lesions—643
 CARIES, Dental
 Bibby, B.G.—Prevention of Dental Caries—313 (Abstract)
 Burgess, R.C. et al.—Topical Stannous Fluoride as a Caries Preventative for the Pre-school Child—312 (Research Annotation)
 Mezl, Z.—Studies of the Superficial Zone in Enamel Caries—312 (Research Annotation)
 Perreault, G.—Present Status of Dental Caries Preventive Measures—106
 Proteolysis—Chelation Theory of Dental Caries—246 (Editorial)
 Winer, R.A. and Cohen, M.M.—Dental Caries in Mongolism—586 (Abstract)
 CASTALDI, C.R.—The Management of Some Common Paedodontic Problems—80
 CASTALDI, C.R., MacRAE and ZACHERL—See MacRae, P.D.
 CASTALDI, C.R., TUBA and HEPPLER—See Tuba, J.
 CHATWIN, J.V.P.—A Case of Cushings Syndrome—239 (Case Report)
 CHATWIN, J.V.P.—Intravenous Sedation in Dentistry—638
 CHEGWIN, A.E.—Dental Health Status of an Adult Group—432
 CHERASKIN, E., RINGSDORF, POWELL and KNIGHT—See Ringsdorf, W.M.
 CIVIL DEFENCE
 Brown, H.K.—Training of Dentists for Emergency Service—755
 Curry, R.B.—Civil Emergency Planning—765
 Hacon, W.S.—Echelons of Medical Care—775
 Hardman, A.C.—Emergency Health Planning—770
 McLaren, H.R.—Role of the Dentist in a National Emergency—759
 Monteith, J.W.—The Problem of Emergency Health Planning—753
 Pepper, Evelyn—Protection of Your Family—781
 You, Your Family and Community in Nuclear Disaster—785 (Editorial)
 COBURN, R.J.—A Review of Tooth Transplantation—510 (Research Annotation)

- COHEN, M.M.—Pediatric Dentistry—264 (Book Review)
 COHEN, M.M. and WINER—See Winer, R.A.
 COMPTON, F.H., BURGESS, MONDROW and NIKIFORUK—See Burgess, R.C.
 COOLEY, W.E.—Reactions of Tin and Fluoride Ions with Etched Enamel—312 (Abstract)
 COPE, Z.—Sir John Tomes, Pioneer of British Dentistry—51 (Book Review)
 CORRESPONDENCE
 Antoni, A.A.—Haemorrhagic Bone Cyst of the Mandible—189
 Beierl, C.D.—Ontario Fluoridation Investigating Committee Report—263
 Bernstein, H.—A Children's Dental Hospital—263
 Castaldi, C.R.—Socio-Economic Trends in Health Services—806
 Leslie, S.W.—Ontario Fluoridation Investigating Committee Report—49
 Leslie, S.W.—Study Group for C.D.A. Reform—806
 Logan, G.M.—Functional Relationship of the Maxilla and Mandible—48
 Marshall, F.J. and Trott, J.R.—Haemorrhagic Bone Cyst of the Mandible—188
 Moore, S.A.—The Ontario Fluoridation Investigating Committee Report—467
 Rauch, B.—Thalidomide Embryopathy, and Possible Viruses—660
 Schumacher, E.L.—Socio-Economic Trends in Health Services—805
 Stephens, R.G.—The Radiograph in Periodontology—337
 Trott, J.R.—Socio-Economic Trends in Health Services—805
 Williams, C.H.M.—The Radiograph in Periodontology—337
 COUNCIL ON DENTAL THERAPEUTICS of the A.D.A.—Accepted Dental Remedies, 1962 — 339 (Book Review)
 COX, M.A.—Paediatrics and Paedodontics March Together—128 (Editorial)
 CRABB, H.S.M. and DARLING, A.I.—The Pattern of Progressive Mineralization in Human Dental Enamel—338 (Book Review)
 CURRIE, P.E.—Practice Administration in a Dental Practice Accepting Children—90
 CURRY, R.B.—Civil Emergency Planning—765

D

- DALE, J.G.—Bone Resorption in a Cell-Free System in Vivo—170 (Research Annotation)
 DEMIRCIOGLU, A.—A Study of the Morphology of the Glenoid Fossa—23 (Research Annotation)
 DENTAL PERSONNEL
 Baird, K.M., Shillington, G.B. and Protheroe, D.H.—A Pilot Study on the Advanced Training and Employment of Auxiliary Dental Personnel in the Royal Canadian Dental Corps—P Preliminary Report—627
 Bureau of Economic Research—Dental Personnel in Canada, 1962—451
 Bureau of Economic Research—Dental Students' Register: 1961-62—389
 DENTAL PRACTICE
 Currie, P.E.—Practice Administration in a Dental Practice Accepting Children—90
 Dental Services Committee—Comments on the Survey of Dentistry in the United States: 2. Dental Practice—174
 Private Practice: Cornerstone of Dental Care—24 (Editorial)
 DENTAL PUBLIC HEALTH
 CHEGWIN, A.E.—Dental Health Status of an Adult Group—432
 Council on Public Health—Comments on the Survey of Dentistry in the United States: 1. Dental Public Health—26
 DENTISTRY IN THE NEWS—35, 130, 179, 252, 325, 399, 457, 525, 590, 654, 725
 DEPARTMENT OF NATIONAL HEALTH AND WELFARE—National Health Grants 1948-1961—407 (Book Review)

DEVRIES, JOAN A., SOMSAWADSI, PLATONOW and FRANCIS—See Francis, L.E.
 DONOHUE, W.B.—The Effects of a Dose of 2,000 Roentgens of X-Ray Irradiation on the Growth of the Jaws in Kittens—22 (Research Annotation)
 DOUGLAS, D.E., FRANCIS AND MELVILLE—See Francis, L.E.

E

ECONOMICS

BUREAU OF ECONOMIC RESEARCH
 Dental Students' Register: 1961-62—389
 Financing Health Care: Two Points of View—173 (Editorial)

EDITORIALS

A Glimpse at Dentistry in the Soviet Union—516
 Banff Dental Research Conference—652
 Brantford, Stratford, Sarnia: More Good News About Fluoridation—653
 Dentistry and the Treaty of Rome—388
 Financing Health Care: Two Points of View—173
 Further Thoughts on Recruitment to the Profession—450
 International Uniformity in Dental Statistics—722
 John B. Macdonald, President of the University of British Columbia—25
 On the Abolition of University Fees—721
 Paediatrics and Paedodontics March Together—128
 Private Practice: Cornerstone of Dental Care—24
 Proteolysis—Chelation Theory of Dental Caries—246
 Requirements and Values of the Modern Hospital Dental Service—518
 See No Evil, Hear No Evil, Speak No Evil—314
 The Canadian Dental Association: Instrument of the Nation's Dentists—588
 The Canadian Dental Association's Brief to the Royal Commission on Health Services—245
 The Development of Paedodontic Practice in Canada—126
 The Positive Role of Journal Advertising—315
 There are None So Blind . . . —587
 Vancouver: Place of Decision—449
 You, Your Family and Community in Nuclear Disaster—785
 EDUCATION OF PUBLIC
 Starkey, P.E.—A Study of Four Methods of Presenting Dental Health Information to Parents—651 (Abstract)
 ENDODONTICS
 Hare, G.C.—The Management of Traumatic Injuries to Children's Teeth—114
 Marshall, F.J.—Biological Approach to Dental Practice—700
 Marshall, F.J.—Endodontic Diagnosis and Treatment: Report of a Failure—507 (Case Report)
 EDUCATION, DENTAL
 Council on Education—Comments on the Survey of Dentistry in the United States: 3. Dental Education—248

F

FEASBY, W.H. and HATTON—See Hatton, Margaret E.
 FEASBY, W.M.—Medication for Children—121
 FINDLAY, J.—An Investigation of the Effects of Hypophysectomy and Hormone Replacement Therapy on the Oral Tissues of Female Rats—311 (Research Annotation)
 FISHER, E.W.—Aetiology and Prevention of Periodontal Breakdown—511 (Abstract)
 FLUORIDATION
 Brantford, Stratford, Sarnia: More Good News About Fluoridation—653 (Editorial)
 Brown, H.K.—1961 Report on the Brantford Fluoridation Caries Study—650 (Abstract)
 Bureau of Economic Research—Fluoridation in Canada, 1962—520

FLUORIDE—RESEARCH

COOLEY, W.E.—Reactions of Tin and Fluoride Ions with Etched Enamel—512 (Abstract)
 FLUORIDE—TOPICAL APPLICATION
 Burgess, R.C. et al—Topical Stannous Fluoride as a Caries Preventative for the Pre-school Child—312 (Research Annotation)
 Muhler, J.C.—A Practical Method for Reducing Caries in Children Not Receiving the Established Benefits of Communal Fluoridation—513 (Abstract)
 Salter, W.A.T. et al—The Anticariogenic Effects of One and Two Applications of Stannous Fluoride on the Deciduous and Permanent Teeth of Children Age 6 and 7—363
 FRANCIS, L.E., DEVRIES, J.A., SOMSAWADSI, P., AND PLATONOW, M.—Control of Postextraction Bacteraemias—683
 FRANCIS, L.E., MELVILLE, K.I. AND DOUGLAS, D.E.—Further Studies on a Physiological Antihistamine—241 (Research Annotation)

G

GAJDA, J., WEINBERG, ANTONI and VAN DE MARK—See Antoni, A.A.
 GARDNER, A.F., STOLLER, S.M. and STEIG, J.M.—A Study of the Traumatic Bone Cyst of the Jaws—151
 GEOFFRION, PAUL—Clinical Application of the Twin-Wire Mechanism—809 (Book Review)
 GRAINGER, R.M.—Some Potentials of Statistical Research in Dentistry—125 (Research Annotation)

H

HACON, W.S.—Echelons of Medical Care—775
 HARDMAN, A.C.—Emergency Health Planning—770
 HARE, G.C.—The Management of Traumatic Injuries to Children's Teeth—114
 HARVOLD, E.P. and HATTON, MARGARET E.—The Burlington Orthodontic Research Centre: A Measure of its Role in Dental Public Health—6
 HARVOLD, E.P. and POYTON, H.G.—A Syndrome of Dual Bite Associated with Open Bite—617
 HAREYETT, R.D.—Malocclusion in Public Health—372
 HATTON, MARGARET E.—A Comparison of Cranio-facial Characteristics in Treated and Untreated Cases at the Burlington Orthodontic Research Centre—22 (Research Annotation)
 HATTON, MARGARET E. and FEASBY, W.H.—Some Research Findings from the Burlington Orthodontic Research Centre of Particular Interest to Clinicians—502
 HATTON, MARGARET E. and HARVOLD — See Harvold, E.P.
 HEAD — GROWTH AND DEVELOPMENT
 Demircioglu, A.—A Study of the Morphology of the Glenoid Fossa—23 (Research Annotation)
 Donohue, W.B.—The Effects of a Dose of 2,000 Roentgens of X-Ray Irradiation on the Growth of the Jaws in Kittens—22 (Research Annotation)
 Hatton, Margaret E.—A Comparison of Cranio-facial Characteristics in Treated and Untreated Cases at the Burlington Orthodontic Research Centre—22 (Research Annotation)
 HEALTH SERVICES
 Andraś, A.—Socio-Economic Trends in Health Services: Labour Looks at Health Care—564
 Brown, H.K.—The Health Professions and the Challenge of Widening Horizons and Changing Patterns—1
 Taylor, M.G.—Socio-Economic Trends in Health Services: The Political Economy of Health Care—558
 The Canadian Dental Association's Brief to the Royal Commission on Health Services — 245 (Editorial)
 There are None So Blind . . . — 587 (Editorial)

- HEPPLER, L.J., CASTALDI and TUBA—See Tuba, J.
- HER MAJESTY'S STATIONERY OFFICE—Report of The Medical Research Council for the year 1960-1961—732 (Book Review)
- HISTOLOGY**
- Anderson, D.L.—Staining of Ribonucleic Acid—166 (Research Annotation)
- Dale, J.G.—Bone Resorption in a Cell-Free System In Vivo—170 (Research Annotation)
- Findlay, J.—An Investigation of the Effect of Hypophysectomy and Hormone Replacement Therapy on the Oral Tissues of Female Rats—311 (Research Annotation)
- Hunt, A.M. and Paynter, K.J.—The Formation of Cells Concerned in Bone and Tooth Development—310 (Research Annotation)
- LeBlond, C.P.—Synthesis of Collagen by Odontoblasts Using Tritium Labelled Glycine—310 (Research Annotation)
- McMurchy, K.A.—Effect of Increased Dietary Phosphate on Tooth Development in the Hamster—311 (Research Annotation)
- Trott, J.R.—Fixation and Staining of Glycogen—167 (Research Annotation)
- HISTORY, Dental**
- Campbell, J.M.—Fifty Years Ago—304
- Cope, Z.—Sir John Tomes, Pioneer of British Dentistry—51 (Book Review)
- HOLE, L.W., SALTER and McCOMBIE—See Salter, W.A.T.
- HOSPITAL DENTAL SERVICE**
- Requirements and Values of the Modern Hospital Dental Service—518 (Editorial)
- HUNT, A.M. and PAYNTER, K.J.—The Formation of Cells Concerned in Bone and Tooth Development—310 (Research Annotation)
- HYGIENISTS, Dental**
- Council on Education—Minimum Requirements for the Approval of a School of Dental Hygiene—455
- I**
- IMPLANTATION**
- Coburn, R.J.—A Review of Tooth Transplantation—510 (Research Annotation)
- INCOME TAX**
- Federal Income Tax Returns by Members of the Dental Profession—31
- INGERVALL, BENGT—Influence of Orthodontic Appliances on Caries Frequency—719 (Abstract)
- INSURANCE FOR DENTISTS**
- Trustees of C.D.A. Pension and Insurance Plans—ANNOUNCEMENT: Canadian Dental Association Pension and Insurance Plans—724
- INTERNATIONAL DENTISTRY**
- A Glimpse at Dentistry in the Soviet Union—516 (Editorial)
- Leatherman, G.H.—The Fédération Dentaire Internationale—221
- Rice, F.B.—The World Health Organization and its Program in Dental Health—231
- Starobinsky, I.M.—Forty Years of Higher Stomatological Education in the U.S.S.R.—515 (Abstract)
- INTERNATIONAL ITEMS**—42, 185, 332, 404, 463, 530, 591, 654, 728, 800
- J**
- JENKINS, H.—Two Orthodontic Appliances: The Sliding Bite Plate and the Bite Director—446
- K**
- KASLOFF, Z.—A Continuing Study of Cracks in Teeth Associated with Various Rotary Cutting Instruments—244 (Research Annotation)
- KENNEDY, J.B.—Use of Premedication in Dental Treatment for Mentally Retarded and Handicapped Patients—514 (Abstract)
- KERR, A.C.—Salivary Secretions in Man—596 (Book Review)
- KLEINBERG, I.—Further Studies on the Production of In Vivo Plaque pH Curves, In Vitro—242 (Research Annotation)
- KNIGHT, L.A., CHERASKIN, RINGS DORF and POWELL—See Ringsdorf, W.M.
- KNUTSON, P.M.—Early Diagnosis of Oral Precancerous Lesions—643
- KOBLER, J.—The Reluctant Surgeon—408 (Book Review)
- KRAUS, B.S. and RIEDEL, R.A.—Vistas on Orthodontics—809 (Book Review)
- L**
- LEATHERMAN, G.H.—The Fédération Dentaire Internationale—221
- LeBLOND, C.P.—Synthesis of Collagen by Odontoblasts Using Tritium Labelled Glycine—310 (Research Annotation)
- LEVINE, Norman—The Clinical Management of Supernumerary Teeth—297
- LIBRARY, Additions to the—52, 192, 265, 409, 538, 810
- LUCIA, V.O.—Modern Gnathological Concepts—536 (Book Review)
- LUSSIER, J.P.—Citrate Metabolism in Bone (Le Métabolisme Citrate dans L'Os)—243 (Research Annotation)
- M**
- MacDOUGALL, J.C. and NIXON, G.S.—A Guide to Dental Therapeutics—469 (Book Review)
- MacGREGOR, S.A.—Child Management in the Dental Office—75
- MacGREGOR, S.A.—The Development of a Paedodontic Practice in Canada—126 (Research Annotation)
- MacRAE, P.D., ZACHERL, W. and CASTALDI, C.R.—A Study of Defects in Class II Dental Amalgam Restorations in Deciduous Molars—491
- McADAM, D.B.—A Maxillary Cuspid Three-Quarter Crown Preparation of Increased Retentive Form—291
- McCLURE, F.J.—Fluoride Drinking Waters—661 (Book Review)
- McCOMBIE, F., HOLE and SALTER—See Salter, W.A.T.—363
- McGREGOR, I.A.—Fundamental Techniques of Plastic Surgery and their Surgical Applications—662 (Book Review)
- McLAREN, H.R.—Role of the Dentist in a National Emergency—759
- McMURCHY, K.A.—Effect of Increased Dietary Phosphate on Tooth Development in the Hamster—311 (Research Annotation)
- MARSHALL, F.J.—Biological Approach to Dental Practice: Endodontics—700
- MARSHALL, F.J.—Endodontic Diagnosis and Treatment: Report of a Failure—507 (Case Report)
- MATERIA MEDICA AND THERAPEUTICS**
- Feesby, W.M.—Medication for Children—121
- MATERIALS, Dental**
- Kasloff, Z.—A Continuing Study of Cracks in the Teeth Associated with Various Rotary Cutting Instruments—244 (Research Annotation)
- MELVILLE, K.I., DOUGLAS and FRANCIS—See Francis, L.E.
- MEMORIAM, In**
- Abell, Henry Harold—811
- Bagnall, John Stanley—192
- Bailey, B.S.—193
- Barron, Frederick—538
- Begin, Maurice—267
- Blair, John Freeman—811
- Bowles, William Herbert—471
- Buffett, Lawrence Llewellyn—538
- Burrows, James Harvey—598
- Caisse, Gerard—598
- Carson, Lorne Garfield—193

Cherry, Donald J.—193
 Christie, Herbert Franklin—410
 Cleveland, Ernest Albert—539
 Coleridge, John George—471
 Common, John Stevenson—193
 Conn, Robert W.—811
 Coons, Kenneth McKinley—410
 Cormier, Joseph Wilfred—811
 Davis, Frederick Roy—267
 Dufresne, J. Romeo—811
 Duncan, J.A.—340
 Duxbury, Frank Raymond—539
 Elkan, Edward—411
 Emerson, Ralph Waldo—598
 Forest, Denis—194, 217
 Freeman, Joseph I.—193
 Fuller, Earl West—598
 Fulton, Edward Mills—267
 Garvin, Frederick George—411
 Gaudet, Leo A.—471
 Godsoe, Frank Amos—410
 Grant, J.C.—341
 Grezenbach, E.W.—341
 Hall, Robert Verney—53
 Harwood, Frank Caister—53
 Hill, Percy—267
 Hill, Van Rowland—411
 Hobson, John Gilbert—471
 Holliss, Arthur Austin—411
 Hoskin, William Stanley—53
 Hyams, Bernard Lawrence—811
 Jackson, Gordon Marshall—812
 Jeffrey, J.R.—341
 Joachim, Albert—735
 Joy, Marion—735
 Labelle, P.I.—341
 Lasalle, Roland—411
 Lawrence, Charles Stanley—194
 Lawrence, Howard Joseph—267
 Le Blanc, J. Alyre—267
 Levesque, George Honare—194
 Liboiron, Pierre-Auguste—539
 Loomer, Brett Baxter—194
 Lumley, Charles C.—598
 MacGregor, John Archibald—194
 MacIntosh, Hugh Cameron—812
 MacLeod, William David—598
 MacMurray, William John—53
 McDowell, Thomas James—812
 McHenry, Earle Willard—266
 McLaren, Hugh Richard—734
 McLaughlin, Wilbur Hamilton—598
 McLean, Alexander Hugh—598
 McLister, James Carl—812
 Maher, Aime—411
 Mason, A.D.A.—340
 Mather, Sandra Ann—735
 Merner, Edward Graham—471
 Millar, James Gordon—53
 Milot, Angelbert Desaulniers—599
 Moffatt, Lloyd Alfred—194
 Morrison, W.R.—341
 Mulloney, Ray Bird—194
 Mutart, Robert Jack—267
 Mutton, Hector Alexander—735
 Nordin, Eric Randell—539
 Paul, Edgar Watson—664
 Peacock, James Edwin—471
 Percival, Harold Slack—539
 Peters, Gordon Dempster—812
 Porter, Alvin Beverley—664
 Prevost, J. Omer—194
 Pukinghorn, J.—341
 Randall, Walter Myers—599
 Reed, D.M.—341
 Rhind, John E.—267
 Richardson, Lloyd G.—194
 Roos, Edward Aaron—53
 Rutherford, Arthur Peter—599
 Savage, Joseph-Leopold—812
 Scharff, Robert Lyle—471
 Scrutton, Alexander Vincent—812
 Staples, Louis William—472
 Stewart, Gordon Andrew—599
 Stewart, Robert Martin—812
 Strachan, James Somerville—813

Sumner, Clayton Darius—599
 Switzer, Franklin Knight—813
 Tolson, Henry Stanislaus—267
 Torrance, R.A.—341
 Trudeau, Ludger-Nolin—472
 Wallace, Robert Davidson—194
 Weir, W.A.—341
 Weselake, Lawrence—813
 Wickens, Donald Charles—599
 Williams, Charles Edward—813
 Young, William, Cuthbert Arthur—472
 MEZL, Z.—Studies of the Superficial Zone in Enamel Caries—312 (Research Annotation)
MISCELLANEOUS
 Campbell, J.M.—Fifty Years Ago—304
 Dentistry and the Treaty of Rome—388 (Editorial)
 International Uniformity in Dental Statistics—722 (Editorial)
 John B. Macdonald, President of the University of British Columbia—25 (Editorial)
 On the Abolition of University Fees—721 (Editorial)
 The Canadian Dental Association: Instrument of the Nation's Dentists—588 (Editorial)
 Vancouver: Place of Decision—449 (Editorial)
 Williams, D.C.—New Developments in Education—18
 MODEL, W.—Drugs of Choice—597 (Book Review)
 MONDROW, T.G., NIKIFORUK, COMPTON and BURGESS—See Burgess, R.C.
 MONTEITH, J.W.—The Problem of Emergency Health Planning—753
 MORGAN, G.A., WOODSIDE and POYTON—See Poyton, H.G.
 MUHLEMANN, H.R. and KONIG, K.G.—Caries Symposium Zürich: The Present Status of Caries Prevention by Fluorine-Containing Dentifrices—898 (Book Review)
 MUHLER, J.C.—A Practical Method for Reducing Caries in Children Not Receiving the Established Benefits of Communal Fluoridation—513 (Abstract)

N

NIKIFORUK, G.—The Division of Dental Research, University of Toronto—709
 NIKIFORUK, G., COMPTON, BURGESS and MONDROW—See Burgess, R.C.

O

OPERATIVE DENTISTRY
 Ambrose, E.R.—Pressure Amalgamation—571
 MacRae, P.D. et al—A Study of Defects in Class II Dental Amalgam Restorations in Deciduous Molars—491
 McAdam, D.B.—A Maxillary Cuspid Three-Quarter Crown Preparation of Increased Retentive Form—291
ORAL DIAGNOSIS
 Chatwin, J.V.P.—A Case of Cushings Syndrome—239 (Case Report)
ORAL PATHOLOGY
 Antoni, A.A., et al—Pathological Fracture of the Mandible Associated with Peripheral Giant Cell Reparative Granuloma—171
 Gardner, A.F. et al—A Study of the Traumatic Bone Cyst of the Jaws—151
ORTHODONTICS
 Antoni, A.A., et al—Pathological Fracture of the mandible Associated with Peripheral Giant Cell Reparative Granuloma—171
ORTHODONTICS
 Harvold, E.P. and Hatton, Margaret E.—The Burlington Orthodontic Research Centre: A Measure of its Role in Dental Public Health—6
 Harvold, E.P. and Poyton, H.G.—A Syndrome of Dual Bite Associated with Open Bite—617

Haryett, R.D.—Malocclusion in Public Health—372
 Hatton, Margaret E. and Feasby, W.H.—Some Research Findings from the Burlington Orthodontic Research Centre of Particular Interest to Clinicians—502

Ingervall, Bengt—Influence of Orthodontic Appliances on Caries Frequency—718 (Abstract)
 Jenkins, H.—Two Orthodontic Appliances: The Sliding Bite Plate and the Bite Director—446
 Popovich, F.—Preventive and Interceptive Orthodontics—95

P

PAEDODONTICS

Castaldi, C.R.—The Management of Some Common Paedodontic Problems—80
 Cox, M.A.—Paediatrics and Paedodontics March Together—128 (Editorial)
 Currie, P.E.—Practice Administration in a Dental Practice Accepting Children—90
 Feasby, W.M.—Medication for Children—121
 Hare, G.C.—The Management of Traumatic Injuries to Children's Teeth—114
 MacGregor, S.A.—Child Management in the Dental Office—75
 MacGregor, S.A.—The Development of a Paedodontic Practice in Canada—126 (Research Annotation)
 Paediatrics and Paedodontics March Together—128 (Editorial)
 Perreault, J.G.—Present Status of Dental Caries Preventive Measures—106
 Popovich, F.—Preventive and Interceptive Orthodontics—95
 The Development of Paedodontic Practice in Canada—126 (Editorial)

PATHOLOGY, General

Anderson, W.A.D.—Pathology—50 (Book Review)
 PAYNTER, K.J.—Organization of Dental Research in Canada—21 (Research Annotation)
 PAYNTER, K.J. and HUNT—See Hunt, A.M.
 PEPPER, EVELYN—Protection of Your Family—781
 PERIODONTICS

Fish, E.W.—Aetiology and Prevention of Periodontal Breakdown—511 (Abstract)
 Troft, J.R.—Biological Approach to Dental Practice—687

PERREAULT, J.G.—Present Status of Dental Caries Preventive Measures—106

PETERSON, S.—The Dentist and his Assistant—191 (Book Review)

PINDBORG, J.J. and MARVITZ, L.—The Dentist in Art—469 (Book Review)

PLATONOW, MARIA., FRANCIS, DeVRIES and SOOMSAWASDI—See Francis, L.E.

POPOVICH, F.—Preventive and Interceptive Orthodontics—95

POWELL, B.J., KNIGHT, CHERASKIN and RINGS-DORF—See Ringsdorf, W.M.

POYTON, H.G.—An Apron for X-Ray Protection—149

POYTON, H.G. and HARVOLD—See Harvold, E.P.
 POYTON, H.G., MORGAN, G.A. and WOODSIDE, D.G.—Radiographic Interpretation of an Unusual Anterior Maxillary Problem—429

PREMEDICATION

Chatwin, J.V.P.—Intravenous Sedation in Dentistry—638

Kennedy, J.B.—Use of Premedication in Dental Treatment for Mentally Retarded and Handicapped Patients—514 (Abstract)

PROSKAUER, C. and WITT, F.H.—Bildgeschichte der Zahnheilkunde (Pictorial History of Dentistry)—733 (Book Review)

PROTHEROE, D.H.—Dental Research in the Royal Canadian Dental Corps—124 (Research Annotation)

PROTHEROE, D.H., BAIRD and SHILLINGTON—See Baird, K.M.

PUBLIC HEALTH—46, 187, 260, 336, 406, 466, 535, 595, 658, 731, 803

R

RADIOLOGY

Poyton, H.G.—An Apron for X-ray Protection—149

Poyton, H.G. et al.—Radiographic Interpretation of an Unusual Anterior Maxillary Problem—429

Sorenson, F.M.—Some Considerations of High versus Low Kilovoltage Techniques in Dental Radiographic Practice—580

RECRUITMENT

Further Thoughts on Recruitment to the Profession—450

Grainger, R.M.—Some Potentials of Statistical Research in Dentistry—125 (Research Annotation)

RESEARCH, 47, 466, 731,

RESEARCH, Dental

Banff Dental Research Conference—652 (Editorial)

Council on Research—Comments on the Survey of Dentistry in the United States: 4. Dental Research—316

Nikforuk, G.—The Division of Dental Research, University of Toronto—709

Paynter, K.J.—Organization of Dental Research in Canada—21 (Research Annotation)

Protheroe, D.H.—Dental Research in the Royal Canadian Dental Corps—124 (Research Annotation)

RICE, F.B.—The World Health Organization and its Program in Dental Health—231

RINGS-DORF, W.M., POWELL, B.J., KNIGHT, L.A. and CHERASKIN, E.—Gingival Bleeding and Pregnancy—439

ROYAL CANADIAN DENTAL CORPS—44, 186, 260, 335, 405, 465, 533, 593, 657, 730, 802.

S

SALIVARY GLANDS

Viener, A.E.—Diagnosis of Sialolithiasis—386 (Abstract)

SALTER, W.A.T., McCOMBIE, F. and HOLE, L.W.—The Anticariogenic Effects of One and Two Applications of Stannous Fluoride on the Deciduous and Permanent Teeth of Children Age 6 and 7—363

SALZMANN, J.A.—Roentgenographic Cephalometrics—407 (Book Review)

SARNAT, B.G. and LASKIN, D.M.—Diagnosis and Surgical Management of Diseases of the Temporomandibular Joint—537 (Book Review)

SCHRAM, W.R.—A Manual of Oral Surgery Techniques—662 (Book Review)

SHEPARD, E.E.—Technique and Treatment with the Twin-Wire Appliance—265 (Book Review)

SHILLINGTON, G.B., PROTHEROE and BAIRD—See Baird, K.M.

SICHER, H.—Orban's Oral Histology and Embryology—808 (Book Review)

SOGNNAES, R. F.—Chemistry and Prevention of Dental Caries—809 (Book Review)

SOOMSAWASDI, PUNNI, PLATONOW, FRANCIS and DeVRIES—See Francis, L.E.

SORENSEN, F.M.—Some Considerations of High versus Low Kilovoltage Techniques in Dental Radiographic Practice—580

STAINS AND PLAQUES ON TEETH

Wildman, J.D.—A Cellular Study of Plaque—586 (Abstract)

STARKEY, P.E.—A Study of Four Methods of Presenting Dental Health Information to Parents—651 (Abstract)

STAROBINSKY, I.M.—Forty Years of Higher Stomatological Education in the U.S.S.R.—515 (Abstract)

STEIG, J.M., GARDNER and STOLLER—See Gardner, A.F.

STOLLER, S.M., STEIG and GARDNER—See Gardner, A.F.

STONES, H. H.—Oral and Dental Diseases—807 (Book Review)

T

- TARPLEY, B.W.—Technique and Treatment with the Labio-Lingual Appliance—264 (Book Review)
 TAYLOR, M.G.—Socio-Economic Trends in Health Services: The Political Economy of Health Care—558
 TEETH, Supernumerary
 Levine, N.—The Clinical Management of Supernumerary Teeth—297
 TRAPOZZANO, V.R.—A Comprehensive Review of Dentistry—733 (Book Review)
 TROTT, J.R.—Biological Approach to Dental Practice: Periodontics—687
 TROTT, J.R.—Fixation and Staining of Glycogen—167 (Research Annotation)
 TUBA, J., HEPPLER, L.J. and CASTALDI, C.R.—Nature of the Cariostatic Action of Dietary Phosphates—243 (Research Annotation)
 TYLMAN, S.D., KEYS, D.A., KNUTSON, J.W., NOYES, H.J., ROBINSON, H.B.G. and WALDRON, C.W.—Yearbook of Dentistry, 1961-62 Series—468 (Book Review)

U

- UNIVERSITY OF MICHIGAN—Handicapped Children: Problems, Programs, Services in Michigan—597 (Book Review)

V

- VAN DE MARK, T.B., GAJDA, WEINBERG and ANTONI—See Antoni, A.A.
 VIENER, A.E.—Diagnosis of Sialolithiasis—386 (Abstract)

W

- WALKER, D.G.—Malformations of the Face—537 (Book Review)
 WEINBERG, S., ANTONI, VAN DE MARK AND GAJDA—See Antoni, A.A.
 WEYMAN, JOAN and PORTEOUS, J.R.—Discoloration of Teeth Possibly due to Administration of Tetracyclines: A Preliminary Report—718 (Abstract)
 WILDMAN, J.D.—A Cellular Study of Plaque—586 (Abstract)
 WILLIAMS, D.C.—New Developments in Education—18
 WINER, R.A. and COHEN, M.M.—Dental Caries in Mongolism—586 (Abstract)
 WOODSIDE, D.G., POYTON and MORGAN—See Poyton, H.G.

Z

- ZACHERL, W., CASTALDI and MacRAE—See MacRae, P.D.

INDEX ANNUEL, 1962 — VOLUME 28

A

- ACTUALITES DENTAIRES, Les—73, 141, 218, 289, 425, 488, 550, 751
 ANATOMIE BUCCALE
 Demirjian, A.—Les caractéristiques raciales de la morphologie des dents—747
 ARCHAMBAULT, M. B.—L'endodontie et ses rapports avec la périodontie—205
 ASSOCIATION, L'—73, 141, 289, 550, 678
 BUREAU DES RECHERCHES ECONOMIQUES DE L'A.D.C.
 La fluoruration au Canada, 1962—614
 Registre des étudiants pour l'année 1961-62—352
 Nombre des dentistes au Canada en 1962—791
 ASSURANCE-SANTE DENTAIRE
 Boisclair, G.—Assurance-santé dentaire et âge moyen des dentistes du Québec—483

B

- BOISCLAIR, G.—Assurance-santé dentaire et âge moyen des dentistes du Québec—483
 BROWN, H. K.—Formation des dentistes pour les services d'urgence—757
 BRUNELLE, A.—Tests de susceptibilité à la carie—67

C

- CANADA, Le—74, 142, 290, 425, 489, 552, 678
 CARIE DENTAIRE
 Brunelle, A.—Tests de susceptibilité à la carie—67
 Lemieux, R.—Expérience sur la decalcification des dents à l'aide d'une solution tampon d'acétate de sodium—475

CHRONIQUE INTERNATIONALE—145, 553, 679, 751
CONGRES ANNUEL—147, 220, 286
CORPS DENTAIRE ROYAL CANADIEN, Le—146,
218, 425, 555, 680, 752

D

DEFENSE CIVILE

Brown, H. K.—Formation des dentistes pour les services d'urgence—757
McLaren, H. R.—Rôle du dentiste dans une urgence nationale—762
Monteith, J. W. — Organisation des mesures d'urgence de santé—754.
Votre sort, celui de votre famille et celui de vos concitoyens au cours d'une explosion nucléaire—786 (editorial)
DEMIRJIAN, A.—Les caracteristiques raciales de la morphologie des dents—747
DENTISTERIE OPERATOIRE
Deschênes, G. H.—Causes de faillite des obturations en amalgame—667
Grégoire, Roger—La digue . . . pourquoi pas?—413
DESCHENES, G. H.—Causes de faillite des obturations en amalgame—667
DIVERS

Mémoire soumis pas la Société dentaire de Montréal à la Commission royale d'enquête sur les services de santé du Canada—343

E

ENDODONTIE

Archambault, M. B.—L'endodontie et ses rapports avec la périodontie—205
Silbert, H.—Une nouvelle méthode du diagnostic des pathologies pulpaire—59
EXERCICE DENTAIRE, L'
Mémoire soumis par la Société dentaire de Montréal à la Commission royale d'enquête sur les services de santé du Canada—343
Roy, Louis C.—Etude sur la situation économique des chirurgiens dentistes du Québec—541

F

FACULTES DENTAIRES CANADIENNES, Les—553, 678, 751

FEINSCHIEDER, I. L.—L'implantation et sa raison d'être—737

FLUORATION

Bureau des recherches économiques de l'A.D.C.—La fluoration au Canada, 1962—614

FLUORURE, Comprimés

Simard, P.—L'on ne peut, sans risque, prescrire des comprimés de fluorure dans toutes les municipalités de la province—482

FOYER INFECTIEUX

(Editorial, Médecine et Hygiène—Une septicémie veineuse subaigue guérie par l'ablation d'un foyer infectieux dentaire—487

G

GREGOIRE, ROGER—La digue . . . pourquoi pas?—

H

HYGIENE PUBLIQUE—554, 681

L

LABBE, P.—L'attachement épithélial et ses modifications au cours des maladies périodontaires—275

LEMIEUX, B.—Les réactions inflammatoires et les maladies périodontaires—133

LEMIEUX, L.—L'hygiène dentaire considérée à l'échelle professionnelle—673.

LEMIEUX, R.—Expérience sur la décalcification des dents à l'aide d'une solution tampon d'acétate de sodium—475

M

McLAREN, H. R.—Rôle du dentiste dans une urgence nationale—762

MARANDA, G.—Diagnostic precoce des lésions precancéreuses de la cavité buccale—601

MEMORIAM, IN

Forest, Denis—194, 217

MONTEITH, J. W. — Organisation des mesures d'urgence de santé—754.

P

PAGE EDITORIALE

Votre sort, celui de votre famille et celui de vos concitoyens au cours d'une explosion nucléaire—786

PATHOLOGIE BUCCALE

Maranda, G.—Diagnostic precoce des lésions precancéreuses de la cavité buccale—601

PERIODONTIE

Archambault, M. B.—L'endodontie et ses rapports avec la périodontie—205

Labbe, P.—L'attachement épithélial et ses modifications au cours des maladies périodontaires—275

Lemieux, B.—Les réactions inflammatoires et les maladies périodontaires—133

PERSONNEL DENTAIRE

Registre des étudiants pour l'année 1961-62—352

PROTHESE DENTAIRE

Feinscheider, I. L.—L'implantation et sa raison d'être—737

R

ROY, Louis C.—Etude sur la situation économique des chirurgiens dentistes du Québec—541

S

SANTE DENTAIRE

Lemieux, L.—L'hygiène dentaire considérée à l'échelle professionnelle—673

Vinet, Ephrem—Activités de la Ligue d'hygiène dentaire de la province de Québec: Résumés des rapports depuis septembre 1955—422

SILBERT, H.—Une nouvelle méthode du diagnostic des pathologies pulpaire—59

SIMARD, P.—L'on ne peut, sans risque, prescrire des comprimés de fluorure dans toutes les municipalités de la province—482

SOCIETE, LA — Mémoire soumis par la Société dentaire Montréal à la Commission royale d'enquête sur les services de santé du Canada—343

V

VINET, EPHREM—Activités de la Ligue d'hygiène dentaire de la province de Québec: Résumés rapports depuis septembre 1955—422

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